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TECHNICAL SUPPORT FOR
ROCKY MOUNTAIN ARSENAL

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FINAL
HUMAN HEALTH EXPOSURE ASSESSMENT
FOR ROCKY MOUNTAIN ARSENAL
VOLUME VII
SUMMARY EXPOSURE ASSESSMENT
VERSION 4.1
SEPTEMBER 1990
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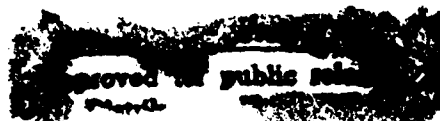
Prepared for:

U.S. ARMY PROGRAM MANAGER'S OFFICE
FOR THE ROCKY MOUNTAIN ARSENAL CONTAMINATION CLEANUP

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LIST OF ACRONYMS

| | |
|-------------------|--|
| CAR | Contamination Assessment Report |
| COC | contaminant of concern |
| COS | contaminants of significance |
| CSA | Central Study Area |
| EA | Endangerment Assessment |
| EI | exposure index |
| EPA | U.S. Environmental Protection Agency |
| ESA | Eastern Study Area |
| FAVN | actual time-average vapor flux |
| F _{CRIT} | critical vapor flux |
| FFA | Federal Facility Agreement |
| FS | feasibility study |
| ft | foot/feet |
| NCSA | North Central Study Area |
| NPSA | North Plants Study Area |
| OAS | Organizations and the State |
| PPLV | preliminary pollutant limit value |
| RfD | reference dose |
| RI | Remedial Investigation |
| RMA | Rocky Mountain Arsenal |
| RME | Reasonable Maximum Exposure |
| RSD | risk-specific dose |
| SAR | Study Area Report |
| SPSA | South Plants Study Area |
| SPPPLV | single pathway preliminary pollutant limit value |
| SSA | Southern Study Area |
| VEI | vapor exposure index |
| WSA | Western Study Area |

EXECUTIVE SUMMARY

Volume VII of the Exposure Assessment for Rocky Mountain Arsenal (RMA) contains the summary of the study area exposure assessments presented in Volume VI-B through VI-H for each of the seven RMA study areas: Western, Southern, North Central, Central, Eastern, South Plants, and North Plants. This report also discusses the conceptual framework for performing the study area exposure assessments and the integration of each to: (1) identify Arsenal-wide contaminants of concern (COCs) (i.e., contaminants for which risk characterization will be performed); (2) screen sites, Arsenal-wide, as Priority 1 or Priority 2 sites; and (3) prepare a study area perspective of unacceptable exposure to be used as a first screen in defining remedial boundaries, along with a comparison to the historical recommendations presented in the 1984 Decontamination Assessment for Land and Facilities at RMA.

The assessments in Volume VI were based on the maximum soil contaminant concentrations reported in the site-specific Contamination Assessment Reports (CARs) and Study Area Reports (SARs). Draft Preliminary Pollutant Limit Values (PPLVs) were computed for each of these site-specific contaminants as described in Volume IV for the five exposure pathways (soil ingestion, suspended particulate inhalation, dermal contact, open space vapor inhalation and enclosed space vapor inhalation). Draft PPLVs were computed for five exposed populations (regulated visitors, casual visitors, recreational visitors, commercial workers, and industrial workers).

The site-by-site assessments consisted of comparisons of the maximum site contaminant concentrations to their corresponding cumulative Draft PPLVs in order to determine exceedances and, hence, establish a first screen for determining sites which may be considered as candidates for remedial action during the feasibility study. These are ranked into two categories: Priority 1 which consists of sites where available soil contaminant concentration data indicate that the maximum detected concentrations exceed the draft human health based criteria; and Priority 2 which consists of sites where available soil contaminant concentration data indicate that the maximum detected concentrations do not exceed the draft human health based criteria.

As was discussed in Volume VI-A, unacceptable exposure is normally considered in cases where the exposure index (EI) is greater than unity ($EI > 1$). To account for the potential of underestimating exposure attributed to an uncertainty in the Draft PPLV values, a value of 0.1 and above for the exposure index was considered as an indication of unacceptable exposure. COCs were, therefore, identified as those chemicals with an EI greater than 0.1. Furthermore, the effect of additivity and Reasonable Maximum Exposure (RME) parameter estimates on the EI were also evaluated to determine if any additional contaminants should be added to the COC list.

Based on the most sensitive exposed population PPLV (i.e., the industrial worker), each study area results were as follows: Of the 31 sites evaluated in the Western Study Area, 14 were designated as Priority 1 sites. The remaining 17 sites were designated as Priority 2 sites. Seventeen chemicals were selected as COCs on these sites.

For the Southern Study Area, 17 sites were evaluated; 13 were designated as Priority 1 sites. The remaining four sites were designated as Priority 2 sites. Fourteen chemicals were selected as COCs for the Southern Study Area.

Of the 43 sites evaluated in the North Central Study Area, 30 were designated as Priority 1 sites. The remaining 13 sites were designated as Priority 2 sites. Thirty-one chemicals were selected as COCs for the North Central Study Area.

For the Central Study Area, 10 sites were evaluated; seven were designated as Priority 1 sites. The remaining three sites were designated as Priority 2 sites. Thirty-seven chemicals were selected as COCs for the Central Study Area.

Of the 26 sites evaluated in the Eastern Study Area, 14 were designated as Priority 1 sites. The remaining 12 sites were designated as Priority 2 sites. Ten chemicals were selected as COCs for the Eastern Study Area.

For the South Plants Study Area, 35 sites were evaluated; 33 were designated as Priority 1 sites. Two sites were designated as Priority 2 sites. Twenty-seven chemicals were selected as COCs for the South Plants Study Area.

Of the 16 sites evaluated in the North Plants Study Area, ten were designated as Priority 1 sites. The remaining six sites were designated as Priority 2 sites. Nine chemicals were selected as COCs for the North Plants Study Area.

Arsenal-wide contaminants of concern and the recommended Priority 1/Priority 2 sites were identified through integration of the study area exposure summaries. Of the 178 sites evaluated, 121 were designated as Priority 1 and 57 for Priority 2.

A total of 38 chemicals were designated as Arsenal-wide COCs, based on the most sensitive exposed population PPLV (i.e., the industrial worker). These chemicals were separated into four categories as follows. Category A consists of the 20 COCs whose maximum concentration resulted in a value of $EI > 10$. Category B consists of the nine COCs whose maximum concentration resulted in $10 > EI > 1.0$. Category C consists of the nine COCs whose maximum concentration resulted in $1.0 > EI > 0.1$. The RME and additivity screen did not identify any additional COCs.

The areas of unacceptable exposure for the Arsenal were estimated by plotting the locations of the borings in which contaminant concentrations resulted in an EI value greater than 0.1 for an industrial worker. First screen remedial boundaries were determined by plotting and calculating the areas of Priority 1 sites. The significance of contamination at RMA was estimated by comparing the Priority 1 site areas to the areas of known (i.e., actual) contaminants. From this analysis, approximately 41 percent of the areas of known contaminants defined in the RI are considered significant based on draft human health criteria. A comparison was also made from a historical perspective between the significant areas recommended in this investigation and the suggested contaminated areas made in the 1984 Decontamination Assessment for Land and Facilities at RMA report. Approximately 59 percent of these areas (which were based strictly on historical information) were

considered to be significant. Although the Human Health Exposure Assessment considers all pathways related to soils which are not expressly precluded by the terms of the Federal Facility Agreement (FFA), it must be recognized that the conclusions of the land use analysis contained in Volume I reiterate the goal of the Organizations as stated in the FFA, that "...significant portions of the Arsenal will be made available for open space for public benefit (including, but not limited to, wildlife habitat(s) and parks(s)) consistent with the terms of this Agreement." This conclusion must be kept clearly in mind and given the appropriate significance in all subsequent use of the Human Health Exposure Assessment as well as other Endangerment Assessment and Feasibility Study products.

1.0 INTRODUCTION

One of the components of the Endangerment Assessment (EA) performed for Rocky Mountain Arsenal (RMA) is the Human Health Exposure Assessment. This report is the EA product described by paragraph 24.30 (viii) of the Federal Facility Agreement (FFA). The Human Health Exposure Assessment presents an analysis of the estimated magnitude, frequency, duration, and routes of exposure for predicted future human populations and their associated activities at the Arsenal. The Human Health Exposure Assessment also presents a quantitative framework for establishing risk-based criteria for the protection of human health.

1.1 OBJECTIVES OF THE EXPOSURE ASSESSMENT

The objectives of the Human Health Exposure Assessment are to: (1) estimate the type and magnitude of exposures to the contaminants that are present at specific sites on RMA; (2) identify the contaminants of concern that will be critical to the remediation of specific sites; (3) identify sites within RMA where current contaminant levels may pose an unacceptable exposure to future target populations; (4) provide a first screen of all sites based on preliminary human health risk-based soil criteria to identify which sites are designated as Priority 1 (sites where available soil contaminant concentration data indicate that the maximum detected concentrations exceed the draft human health based criteria), and Priority 2 (sites where available soil contaminant concentration data indicate that the maximum detected concentrations do not exceed the draft human health based criteria); (5) provide a basis for future detailed characterization of risk associated with all sites; and (6) provide the database for establishing a study area-wide and Arsenal-wide perspective of the spatial extent of remediation which may be required at RMA.

1.2 ORGANIZATION OF THE EXPOSURE ASSESSMENT

The above objectives were met by performing a sequence of analyses and evaluations which are documented in eight individual report volumes. The content of these documents is summarized below.

Volume I is an evaluation of land use and exposed populations at RMA which includes: (1) projections of potential land use alternatives and associated human activities for the Arsenal following cleanup; and (2) projections of human populations that may be potentially exposed to residual contamination, following remediation.

Volumes II and III consist of the Toxicity Assessment of the RMA target contaminants and include: (1) summary toxicity profiles developed by both the Army (Volumes II and III) and Shell (Volumes II-A and III-A) for each target chemical; and (2) a listing of reference doses (RfDs) for noncarcinogens and risk-specific doses (RSDs) for carcinogens, together with a description of the basis for their computation.

Volume IV consists of a detailed presentation of the preliminary pollutant limit value (PPLV) methodology as applied to RMA including a description of the exposure pathway equations together with general parameters appropriate to the projected exposed populations and land uses.

Volume V consists of the second part to the PPLV methodology. It contains: (1) the computed Draft PPLVs for each applicable direct exposure pathway and projected exposed population; (2) supporting chemical-specific parameter data; and (3) a computer user's manual and diskette for computing the Draft PPLVs.

Volume VI (A-H) is a detailed presentation of the study area exposure assessments consisting of comparisons of the site contaminant concentrations measured during the Remedial Investigation (RI) with their corresponding Draft PPLVs, calculated and presented for the range of projected exposed populations and their associated activities.

Volume VII (this report) is an integrated presentation of the study area exposure assessments (Volume VI) consisting of: (1) the identification of Arsenal-wide contaminants of concern (i.e., contaminants for which risk characterization will be performed); (2) an Arsenal-wide initial screening to designate sites as Priority 1 and Priority 2; (3) a study area perspective of unacceptable exposure to be used as a first screen in defining remedial

boundaries, along with a comparison to the historical recommendations presented in the 1984 Decontamination Assessment for Land and Facilities at RMA; and (4) the results of an analysis of additivity and consideration of reasonable maximum exposure parameters in the PPLV equations.

Volume VIII is a compilation of the Army's responses to the Organizations and the State (OAS) comments on the Draft Exposure Assessment Report submitted to the parties in July 1989.

1.3 REPORT FORMAT

The conceptual framework for the study area exposure assessments is presented in Section 2.0. The summary of the study area exposure assessments are discussed in Section 3.0. Section 4.0 presents the Arsenal-wide perspective of the exposure assessment, and Section 5.0 provides a historical perspective of contamination. Section 6.0 includes the cited references.

2.0 APPROACH

2.1 CONCEPTUAL FRAMEWORK

2.1.1 Study Area Exposure Assessments

The study area exposure assessments were performed on a site-by-site basis for each of the seven RMA study areas. The approach used in these assessments is depicted in Figure 2-1. A summary follows.

The evaluations in the study area exposure assessments were based on the soil contaminant concentrations presented in the site-specific RI Contamination Assessment Reports (CARs) and the groundwater data presented in the DP Associates Groundwater Base. The site designations are consistent with those used in the RI Study Area Report (ARs). Maximum contaminant concentrations for soil and groundwater were reported at each site.

2.1.1.1 Soils

For soil, Draft PPLVs were computed for each of the site-specific contaminants as described in Volume IV for the direct exposure pathways (soil ingestion, suspended particulate inhalation, and dermal contact) and the indirect pathways (open space and enclosed space vapor inhalation). Cumulative pathway quantities were computed for five exposed populations (regulated visitors, casual visitors, recreational visitors, commercial workers, and industrial workers).

The site-by-site evaluations consisted of comparisons of the maximum soil contaminant concentrations to their corresponding cumulative Draft PPLVs, and the corresponding exposure index (EI) was computed. The EI is defined as the ratio of the maximum contaminant concentration to the cumulative Draft PPLV. For those sites where the EI is less than 0.1, a recommendation was made to designate them as Priority 2 sites. Sites displaying an EI greater than 0.1 were designated as Priority 1 sites, and the contaminants of concern (COCs) determined. Based on the COCs identified for the most sensitive exposed population identified in Volume I, the industrial worker, the areas and boundaries of exceedance were determined and are presented in this volume.

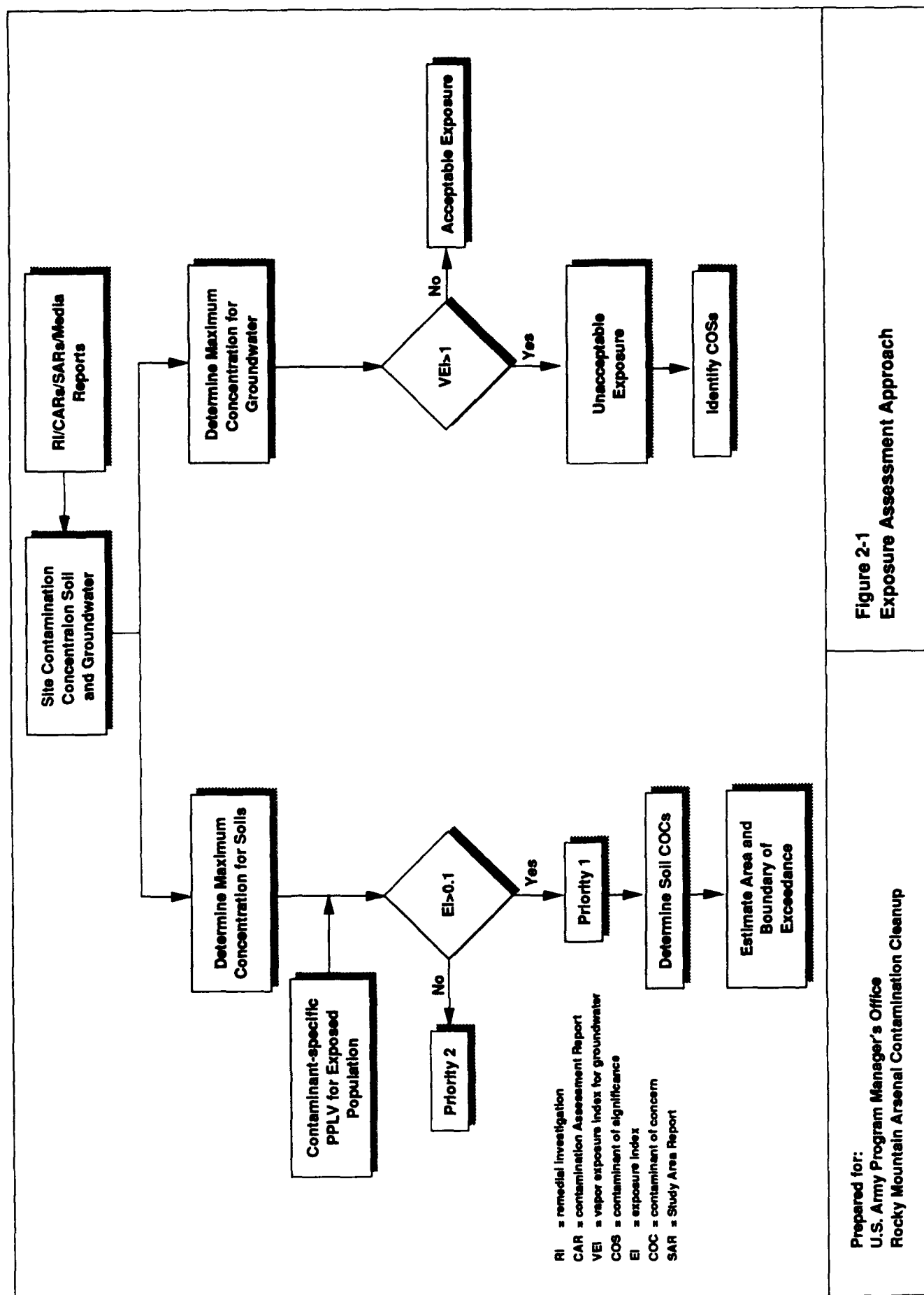


Figure 2-1
Exposure Assessment Approach

Prepared for:
U.S. Army Program Manager's Office
Rocky Mountain Arsenal Contamination Cleanup

Although the Human Health Exposure Assessment considers all pathways related to soils which are not expressly precluded by the terms of the FFA, it must be recognized that the conclusions of the land use analysis contained in Volume I reiterate the goal of the Organizations as stated in the FFA, that "... significant portions of the Arsenal will be made available for open space for public benefit (including, but not limited to, wildlife habitat(s) and park(s)) consistent with the terms of this Agreement." This conclusion must be kept clearly in mind and given the appropriate significance in all subsequent use of the Human Health Exposure Assessment as well as other EA and Feasibility Study (FS) products.

2.1.1.2 Groundwater

For groundwater, the vapor exposure index (VEI) was computed for each contaminant measured. The VEI is defined as the ratio of the actual time-average vapor flux (FAVN) to the critical vapor flux (F_{CRT}) as defined in Volume VI-A (Section 2.5.4) of the Exposure Assessment Report. The value of VEI was then examined. If a VEI was less than 1, then the exposure to contaminant vapors contributed by groundwater at the site was considered acceptable. If a VEI was greater than 1, then the exposure was deemed unacceptable and the contaminants contributing to this exposure were identified as contaminants of significance (COSs) for groundwater only. These compounds are presented here as additional information for consideration of the practicality in constructing structures containing basements at the site.

2.1.2 Integration of Exposure Assessments

The exposure evaluations for the industrial worker, presented in Volumes VI-B through VI-H, were integrated to estimate "first cut" or preliminary remedial boundaries. The areas within these boundaries will be considered as first priority in the FS. The boundaries will be redefined following the detailed Uncertainty Analysis performed during the Risk Characterization. The procedure used is discussed in detail in Section 4.3 of this report.

2.2 SPECIAL CONSIDERATIONS IN CHARACTERIZING EXPOSURE

The site-by-site exposure assessments presented in Volumes VI-B through VI-H were performed as described in Section 2.1.1. The assessments were modified for a few special cases. These included lake and pond sites, sewer lines and the buried lake sludge in Southern Study Area (SSA) Sites SSA-3a and SSA-3b. The manner in which these sites were treated was discussed in Volume VI-A, Section 2.5.2. The implications on characterizing exposure for these sites is discussed below.

Concentrations of contaminants measured in lake and pond sediments were conservatively evaluated for the direct exposure pathways for all lake sites because: (1) certain lakes are completely or partially dry at various times of the year, and (2) certain lakes have been drained in the past exposing bottom sediments. Inhalation of vaporized sediment contaminants was assessed; however, no significant exposure was predicted. One overall evaluation was made for each unique sewer line using maximum contaminant concentrations only, as discussed in Volume VI-A, Section 2.5.2.2. The maximum concentrations were assumed to represent the contamination along the entire sewer line as a worst-case estimate. Boring-by-boring exceedances were not computed for sewer lines because these sites are already being considered for remedial action under the ongoing FS.

The buried lake sludge at Site SSA-3a was evaluated as discussed in Volume VI-A, Section 2.5.3. Concentrations of contaminants that were not measured in the Phase I investigation and not analyzed in Phase II were assumed to occur at the Phase I detection limit as a worst-case analysis. The exposure evaluation performed with these values resulted in no exceedances and, therefore, did not affect the site designation for Priority 2.

2.3 DECISIONS FOR INCORPORATING NONTARGETS IN THE EXPOSURE ASSESSMENT

As discussed in Volume VI-A, Section 2.2.3.1, the contaminants included in the nontarget list presented in the RMA Chemical Index (EBASCO, 1988/RIC 88357R01) were screened in order to determine if PPLVs were to be computed. This analysis was performed on a site-by-site basis and used four screening criteria: frequency of occurrence, similarity of

nontarget concentration to that of target contaminants, suspicion that the detection was a laboratory contaminant, and co-occurrence of nontargets with targets in Arsenal soil. Based on these screening evaluations, only one nontarget chemical, 1,1,2,2-tetrachloroethane, met the above screening criteria. This chemical was also found to be a COC Arsenal-wide for both direct and indirect exposure pathways.

For cases in which the nontarget decision was to "defer," the chemical was reevaluated on an Arsenal-wide basis. Trichloropropene was the only contaminant that met these criteria in the South Plants Study Area (SPSA) Site SPSA-12a. This contaminant was detected in eight sites. The above screen was applied on an Arsenal-wide basis and the need to compute a PPLV for trichloropropene was rejected, since both the frequency of occurrence and concentration were considered to be low.

3.0 SUMMARY OF STUDY AREA EXPOSURE ASSESSMENT

Each of the seven Study Area Exposure Assessments presented in Volumes VI-B through VI-H were integrated as discussed in Section 2.1.2 and the results are detailed below. It should be emphasized here that these results represent the exposure assessments for the industrial worker (i.e., the most sensitive exposed population PPLV). The results of the exposure assessments for the other identified exposed populations may result in fewer COCs as well as Priority 1 sites.

3.1 WESTERN STUDY AREA

The Western Study Area Exposure Assessment is summarized in Tables 3-1 and 3-2. Of the 31 sites evaluated in the Western Study Area (WSA), 14 sites were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Section 3 - Isolated Spill Area (WSA-1b), Railyard - Zinc Detection Area (WSA-1d), Railyard-Nemagon Spill Area (WSA-1e), Railyard - Aldrin and Dieldrin Detection (WSA-1f), Railyard - Mercury Detection (WSA-1g), West Landfill - Burning Pit (WSA-2), East Landfill - Toluene, Trichloropropene, and Cadmium Detection (WSA-3a), East Landfill - Main Surface Disposal Area (WSA-3c), Open Storage and Salvage Yard Support Areas (WSA-4b), North Landfill - Trench (WSA-5a), North Landfill - Trenches (WSA-5d), Motor Pool Area - Main Ditch (WSA-6a), Motor Pool - Drainage Ditch (WSA-6d), and Sanitary Sewers - Internal Sediment (WSA-7a). WSA-1b, WSA-1d, WSA-1e, WSA-1f, WSA-1g, WSA-6a, WSA-6d, and WSA-7a are Priority 1 sites based on RI data in this Exposure Assessment, and identified in the FFA as sites for Interim Response Action (IRA).

The remaining 17 sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Section 3 - Pyrene/Fluoranthene Detection Area (WSA-1a), Section 3 - Wood Preservation Derivative Area (WSA-1c), East Landfill - Disposal Pit (WSA-3b), East Landfill - Methylisobutyl Ketone Detection (WSA-3d), Open Storage Yard - Methyl Cyclohexane Detection (WSA-4a), North Landfill - Burn Pit (WSA-5b), North Landfill-Trench (WSA-5c), Motor Pool - Fuel Tank Storage Area (WSA-6b), Motor Pool Area - Roundhouse and Old Septic

TABLE 3-1
WESTERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--|--|-------------------------|
| WSA-1a | None | None | Priority 2 |
| WSA-1b | Benzene Carbon tetrachloride Tetrachloroethylene | Indirect Indirect Indirect | Priority 1 |
| WSA-1c | None | None | Priority 2 |
| WSA-1d | Methylene chloride | Indirect | Priority 1 |
| WSA-1e | Dibromochloropropane | Direct, Indirect | Priority 1 |
| WSA-1f | Aldrin Dieldrin Methylene chloride | Direct, Indirect Direct, Indirect Indirect | Priority 1 |
| WSA-1g | Methylene chloride | Indirect | Priority 1 |
| WSA-2 | Aldrin Dieldrin Hexachlorocyclopentadiene 1,1,2,2-Tetrachloroethane Tetrachloroethylene Trichloroethylene Arsenic Cadmium Chromium Lead | Direct Direct, Indirect Indirect Direct, Indirect Indirect Direct, Indirect Direct Direct Direct Direct | Priority 1 |
| WSA-3a | Cadmium | Direct | Priority 1 |
| WSA-3b | None | None | Priority 2 |
| WSA-3c | Methylene chloride Tetrachloroethylene Trichloroethylene Cadmium | Indirect Indirect Indirect Direct | Priority 1 |

TABLE 3-1 (Continued)
WESTERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--|--|-------------------------|
| WSA-3d | None | None | Priority 2 |
| WSA-4a | None | None | Priority 2 |
| WSA-4b | Methylene chloride Tetrachloroethylene Trichloroethylene Chromium | Indirect Indirect Indirect Direct | Priority 1 |
| WSA-5a | Tetrachloroethylene | Indirect | Priority 1 |
| WSA-5b | None | None | Priority 2 |
| WSA-5c | None | None | Priority 2 |
| WSA-5d | Aldrin Dicyclopentadiene Dieldrin Isodrin Arsenic Cadmium Chromium Copper Lead | Direct Indirect Direct, Indirect Direct Direct Direct Direct Direct Direct | Priority 1 |
| WSA-6a | Tetrachloroethylene Trichloroethylene Arsenic Cadmium Chromium Lead | Indirect Indirect Direct Direct Direct Direct | Priority 1 |
| WSA-6b | None | None | Priority 2 |
| WSA-6c | None | None | Priority 2 |

TABLE 3-1 (Continued)
WESTERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--------------------------------|---------------------------|-------------------------|
| WSA-6d | Arsenic Cadmium | Direct Direct | Priority 1 |
| WSA-6e | None | None | Priority 2 |
| WSA-7a | Chromium Methylene chloride | Direct Indirect | Priority 1 |
| WSA-7b | None | None | Priority 2 |
| WSA-8a | None | None | Priority 2 |
| WSA-8b | None | None | Priority 2 |
| WSA-8c | None | None | Priority 2 |
| WSA-8d | None | None | Priority 2 |
| WSA-8e | None | None | Priority 2 |
| WSA-8f | None | None | Priority 2 |

TABLE 3-2
WESTERN STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| WSA-2 | 1,1-Dichloroethylene | Enclosed |

Tank System (WSA-6c), Motor Pool Area - Culvert Outfall (WSA-6e), Sanitary Sewers - Overflow Area (WSA-7b), Section 33 - Copper Detection (WSA-8a), Section 33 - Zinc Detection (WSA-8b), Section 4 - 1,1,2,2-Tetrachloroethane Detection (WSA-8c), Section 3 - Phosphoric Acid, Tributyl Ester Detection (WSA-8d), Section 3 - Phosphoric Acid, Tributyl Ester Detection (WSA-8e), and Section 9 - Methyl Naphthalene Detection (WSA-8f). WSA-1a, WSA-1c, WSA-6b, WSA-6c, and WSA-6e are Priority 2 sites based on RI data in this Exposure Assessment, but are identified in the FFA as sites for IRA.

The COCs in soil and sediment (i.e., those displaying an EI greater than 0.1) for the WSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, carbon tetrachloride, dibromochloropropane, dicyclopentadiene, Dieldrin, hexachlorocyclopentadiene, Isodrin, methylene chloride, 1,1,2,2-tetrachloroethane, tetrachloroethylene, trichloroethylene, arsenic, cadmium, chromium, copper, and lead.

The COS in groundwater (i.e., those displaying a VEI greater than 1) for the WSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), is 1,1-dichloroethylene.

3.2 SOUTHERN STUDY AREA

The Southern Study Area Exposure Assessment is summarized in Tables 3-3 and 3-4. Of the 17 sites evaluated in the SSA, 13 were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Eastern Upper Derby Lake (SSA-1a), Upper Derby Lake (SSA-1b), Lower Derby Lake (SSA-1c), Rod and Gun Club Pond (SSA-1d), Lake Ladora (SSA-1e), Drainage Ditches (SSA-2a), Sand Creek Lateral (SSA-2b), Drainage Ditch and Overflow Basin (SSA-2c), Buried Lake Sludge (SSA-3a), Buried Lake Sludge (SSA-3b), Trash Dump (SSA-4), Havana/Peoria Streets - Ponds and Ditches (SSA-5b), and Section 11 - Ulvalda Ditch (SSA-5e).

TABLE 3-3
SOUTHERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---|--|-------------------------|
| SSA-1a | 1,1,2,2-Tetrachloroethane | Cumulative | Priority 1 |
| SSA-1b | Aldrin Dieldrin Arsenic PPDDE PPDDT Chlordane 1,1,2,2-Tetrachloroethane | Direct, Indirect Direct, Indirect Direct Direct Direct, Indirect Direct, Indirect Direct | Priority 1 |
| SSA-1c | Aldrin Dibromochloropropane Dieldrin Chlordane Chromium | Direct, Indirect Direct Direct Direct Direct | Priority 1 |
| SSA-1d | 1,1,2,2-Tetrachloroethane | Cumulative | Priority 1 |
| SSA-1e | Aldrin Dieldrin Arsenic Chromium | Direct Direct Direct Direct | Priority 1 |
| SSA-1f | None | None | Priority 2 |
| SSA-2a | Aldrin Dieldrin Methylene chloride | Direct, Indirect Direct, Indirect Indirect | Priority 1 |
| SSA-2b | Aldrin Chlordane PPDDE PPDDT Dieldrin Isodrin Lead | Direct, Indirect Direct Direct Direct, Indirect Direct, Indirect Indirect Direct | Priority 1 |

TABLE 3-3 (Continued)
SOUTHERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---|--|-------------------------|
| SSA-2c | PPDDE Dieldrin Methylene chloride 1,1,2,2-Tetrachloroethane Arsenic | Direct Direct Indirect Direct, Indirect Direct | Priority 1 |
| SSA-3a | Aldrin Dieldrin | Direct Direct | Priority 1 |
| SSA-3b | Aldrin Chlordane PPDDT Dieldrin Hexachlorocyclopentadiene | Direct, Indirect Direct Direct Direct, Indirect Indirect | Priority 1 |
| SSA-4 | Aldrin Dieldrin Chlordane | Direct Direct Direct | Priority 1 |
| SSA-5a | None | None | Priority 2 |
| SSA-5b | Carbon tetrachloride Chlordane | Indirect Direct, Indirect | Priority 1 |
| SSA-5c | None | None | Priority 2 |
| SSA-5d | None | None | Priority 2 |
| SSA-5e | Dibromochloropropane | Direct, Indirect | Priority 1 |

TABLE 3-4
SOUTHERN STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|------------------------------|
| | None | |

The remaining four sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Lake Mary (SSA-1f), Section 1 - Dibromochloropropane Detection (SSA-5a), Section 12 - Lead Detection (SSA-5c), and Section 12 - Lead Detection (SSA-5d).

The COCs in soil and sediment (i.e., those displaying an EI greater than 0.1) for the SSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, carbon tetrachloride, Chlordane, dibromochloropropane, Dieldrin, PPDDE, PPDDT, hexachlorocyclopentadiene, Isodrin, methylene chloride, 1,1,2,2-tetrachloroethane, arsenic, chromium, and lead.

No COSs in groundwater (i.e., those displaying a VEI greater than 1) were identified for the SSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker).

3.3 NORTH CENTRAL STUDY AREA

The North Central Study Area Exposure Assessment is summarized in Tables 3-5 and 3-6. Of the 43 sites evaluated in the North Central Study Area (NCSA), 30 were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Basin A (NCSA-1a), Lime Settling Basins (NCSA-1b), Drainage Ditch (NCSA-1c), Liquid Storage Pool (NCSA-1d), Burn Site (NCSA-1e), South Plants Drainage Ditches (NCSA-1f), Basin C (NCSA-2a), Basin D (NCSA-2b), Basin E (NCSA-2c), Drainage Ditches (NCSA-2d), Basin F (NCSA-3), Deep Disposal Well (NCSA-4a), Basin F Exterior (NCSA-4b), Basin B (NCSA-5a), Drainage Ditches (NCSA-5b), Sand Creek Lateral (NCSA-5c), Surface Drainage Canal (NCSA-5d), Chemical Sewers from South Plants (NCSA-6a), Chemical Sewers from North Plants (NCSA-6b), North Bog (NCSA-7), Sanitary Sewer Lines (NCSA-8a), Domestic Sewer Treatment Plant (NCSA-8b), Section 34 - Mercury Detection (NCSA-8c), Section 23 - Cadmium Detection (NCSA-9b), Section 23 - Cadmium Detection (NCSA-9c), Section 23 - Cadmium Detection (NCSA-9d), Section 26 - Cadmium Detection (NCSA-9h), Section 27 - Arsenic Detection (NCSA-9i), and Section 35 - Arsenic Detection (NCSA-9o), Cadmium Detection (NCSA-9r). NCSA-1a, NCSA-1b, NCSA-2a, NCSA-2b, NCSA-2c, NCSA-3, and NCSA-8a

TABLE 3-5
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Critical Exposure Contaminant of Concern | Priority Pathway | Recommendation |
|-----------|---|---------------------|----------------|
| NCSA-1a | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Indirect | |
| | Chlordane | Direct | |
| | Chlorobenzene | Indirect | |
| | PPDDE | Direct | |
| | PPDDT | Direct | |
| | Dicyclopentadiene | Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Endrin | Direct | |
| | Fluoroacetic acid | Direct | |
| | Hexachlorocyclopentadiene | Direct, Indirect | |
| | Isodrin | Direct | |
| | Methylene chloride | Indirect | |
| | Tetrachloroethylene | Indirect | |
| | Trichloroethylene | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Chromium | Direct | |
| | Mercury | Direct | |
| NCSA-1b | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Indirect | |
| | Chlordane | Direct, Indirect | |
| | Chloroform | Cumulative | |
| | PPDDE | Direct, Indirect | |
| | PPDDT | Direct, Indirect | |
| | Dibromochloropropane | Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Endrin | Direct | |
| | Fluoroacetic acid | Direct | |
| | Isodrin | Direct | |
| | Methylene chloride | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Lead | Direct | |
| | Mercury | Direct | |

TABLE 3-5 (Continued)
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--|--|-------------------------|
| NCSA-1c | Aldrin Dieldrin Fluoroacetic acid Arsenic | Direct Direct, Indirect Direct Direct | Priority 1 |
| NCSA-1d | Aldrin Dieldrin Arsenic | Direct, Indirect Direct, Indirect Direct | Priority 1 |
| NCSA-1e | Aldrin Chlordane Dieldrin Arsenic Cadmium Chromium Lead Mercury | Direct, Indirect Direct, Indirect Direct, Indirect Direct Direct Direct Direct Direct | Priority 1 |
| NCSA-1f | Aldrin Dieldrin Fluoroacetic acid Arsenic Cadmium | Direct Direct, Indirect Direct Direct Direct | Priority 1 |
| NCSA-1g | None | None | Priority 2 |
| NCSA-2a | Aldrin PPDDE Dieldrin Arsenic | Direct, Indirect Direct Direct, Indirect Direct | Priority 1 |
| NCSA-2b | Aldrin Dieldrin Fluoroacetic acid Arsenic Lead Cadmium | Direct, Indirect Direct, Indirect Direct Direct Direct Direct | Priority 1 |

TABLE 3-5 (Continued)
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|------------------------------|---------------------------|-------------------------|
| NCSA-2c | Dieldrin | Direct | Priority 1 |
| | Fluoroacetic acid | Direct | |
| | Arsenic | Direct | |
| | Chromium | Direct | |
| NCSA-2d | Aldrin | Direct, Indirect | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| | Arsenic | Direct | |
| NCSA-3 | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Indirect | |
| | Bicycloheptadiene | Indirect | |
| | Chloroacetic acid | Direct | |
| | Chloroform | Direct, Indirect | |
| | Chlorophenylmethyl sulfide | Indirect | |
| | Chlorophenylmethyl sulfone | Indirect | |
| | Chlorophenylmethyl sulfoxide | Indirect | |
| | Dibromochloropropane | Direct, Indirect | |
| | 1,2-Dichloroethane | Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Endrin | Direct | |
| | Isodrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | Tetrachloroethylene | Direct, Indirect | |
| | 1,1,2,2-Tetrachloroethane | Direct, Indirect | |
| | Toluene | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| NCSA-4a | Aldrin | Direct, Indirect | Priority 1 |
| | Dibromochloropropane | Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Isodrin | Direct | |

TABLE 3-5 (Continued)
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|--------------------|---|--|-------------------------|
| NCSA-4a (cont.) | Methylene chloride Tetrachloroethylene | Indirect Indirect | |
| NCSA-4b | Aldrin Chlordane PPDDT Dieldrin Endrin Fluoroacetic acid Isodrin Methylene chloride | Direct, Indirect Direct Direct, Indirect Direct, Indirect Direct Direct Direct Indirect | Priority 1 |
| NCSA-5a | Aldrin Chlordane Dieldrin Arsenic Cadmium | Direct Direct, Indirect Direct, Indirect Direct Direct | Priority 1 |
| NCSA-5b | Aldrin Chlordane Dieldrin Fluoroacetic acid Methylene chloride 1,1,2,2-Tetrachloroethane Arsenic Cadmium | Direct, Indirect Direct, Indirect Direct, Indirect Direct Indirect Indirect Direct Direct | Priority 1 |
| NCSA-5c | Aldrin Dieldrin Cadmium Lead | Direct, Indirect Direct, Indirect Direct Direct | Priority 1 |
| NCSA-5d | Aldrin Dieldrin Cadmium | Direct, Indirect Direct, Indirect Direct | Priority 1 |

TABLE 3-5 (Continued)
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--|--|-------------------------|
| NCSA-6a | Aldrin Chloroform Dieldrin Dimethyldisulfide | Indirect Indirect Indirect Indirect | Priority 1 |
| NCSA-6b | Aldrin PPDDE PPDDT Dibromochloropropane Dieldrin Isodrin Arsenic | Direct, Indirect Direct Direct Indirect Direct, Indirect Direct Direct | Priority 1 |
| NCSA-7 | Dieldrin | Direct | Priority 1 |
| NCSA-8a | Chloroform Dieldrin Chromium | Indirect Direct, Indirect Direct | Priority 1 |
| NCSA-8b | Aldrin Dieldrin Arsenic | Direct Direct, Indirect Direct | Priority 1 |
| NCSA-8c | Chromium Lead | Direct Direct | Priority 1 |
| NCSA-9a | None | None | Priority 2 |
| NCSA-9b | Cadmium | Direct | Priority 1 |
| NCSA-9c | Cadmium | Direct | Priority 1 |
| NCSA-9d | Cadmium | Direct | Priority 1 |
| NCSA-9e | None | None | Priority 2 |
| NCSA-9f | None | None | Priority 2 |

TABLE 3-5 (Continued)
NORTH CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|------------------------|---------------------------|-------------------------|
| NCSA-9g | None | None | Priority 2 |
| NCSA-9h | Cadmium | Direct | Priority 1 |
| NCSA-9i | None | None | Priority 2 |
| NCSA-9j | None | None | Priority 2 |
| NCSA-9k | None | None | Priority 2 |
| NCSA-9l | Arsenic | Direct | Priority 1 |
| NCSA-9m | None | None | Priority 2 |
| NCSA-9n | None | None | Priority 2 |
| NCSA-9o | Arsenic | Direct | Priority 1 |
| NCSA-9p | None | None | Priority 2 |
| NCSA-9q | None | None | Priority 2 |
| NCSA-9r | Cadmium | Direct | Priority 1 |
| NCSA-9s | None | None | Priority 2 |

TABLE 3-6
NORTH CENTRAL STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| NCSA-1a | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Dicyclopentadiene | Enclosed |
| | Methylene chloride | Enclosed |
| | Trichloroethylene | Enclosed |
| NCSA-1b | Carbon tetrachloride | Enclosed |
| | Chloroform | Open, Enclosed |
| | Methylene chloride | Enclosed |
| | Trichloroethylene | Enclosed |
| NCSA-1d | Benzene | Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Methylene chloride | Enclosed |
| NCSA-1f | Benzene | Open, Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Methylene chloride | Enclosed |
| NCSA-1g | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Dicyclopentadiene | Enclosed |
| | Tetrachloroethylene | Enclosed |
| | Trichloroethylene | Enclosed |
| NCSA-4a | Benzene | Enclosed |

TABLE 3-6 (Continued)
NORTH CENTRAL STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|--------------------|---|--|
| NCSA-4a (cont.) | Chloroform 1,2-Dichloroethane Dicyclopentadiene Tetrachloroethylene | Enclosed Enclosed Enclosed Enclosed |
| NCSA-4b | Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene Dicyclopentadiene | Enclosed Enclosed Enclosed Enclosed |
| NCSA-5d | Chloroform | Enclosed |
| NCSA-8b | Carbon tetrachloride | Enclosed |
| NCSA-9a | Chloroform Dicyclopentadiene | Enclosed Enclosed |
| NCSA-9g | Benzene 1,2-Dichloroethane Chloroform 1,1-Dichloroethylene Dicyclopentadiene Tetrachloroethylene | Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed |
| NCSA-9o | Chloroform | Enclosed |
| NCSA-9q | Benzene Carbon tetrachloride Chlorobenzene Chloroform Dibromochloropropane 1,1-Dichloroethylene Dicyclopentadiene Methylene chloride Tetrachloroethylene Trichloroethylene | Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed Enclosed |

TABLE 3-6 (Continued)
NORTH CENTRAL STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| NCSA-9r | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Dicyclopentadiene | Enclosed |
| | Methylene chloride | Enclosed |
| | Trichloroethylene | Enclosed |
| NCSA-9s | Chloroform | Enclosed |

are Priority 1 sites based on RI data in this Exposure Assessment, and identified in the FFA as sites for IRA.

The remaining 13 sites evaluated were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Inferred Surficial Contamination (NCSA-1g), Section 23 - Diisopropylmethyl Phosphonate Detection (NCSA-9a), Section 24 - Zinc Detection (NCSA-9e), Section 25 - Zinc and Copper Detections (NCSA-9f), Section 26 - Suspected Methylene Chloride Detection (NCSA-9g), Section 26 - Butoxyethanol Detection (NCSA-9i), Section 26 - Mercury Detection (NCSA-9j), Section 26 - Trichloropropene Detection (NCSA-9k), Zinc Detection in Bedrock (NCSA-9m), Section 35 - Trichloropropene Detection (NCSA-9n), and Section 36 - Arsenic and Mercury Detections (NCSA-9p), Mercury Detection (NCSA-9q), and Section 36 - Mercury Detection (NCSA-9s).

The COCs in soil and sediment (i.e., those displaying an EI greater than 0.1) for the NCSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, bicycloheptadiene, Chlordane, chloroacetic acid, chlorobenzene, chloroform, chlorophenylmethyl sulfide, chlorophenylmethyl sulfone, chlorophenylmethyl sulfoxide, dibromochloropropane, 1,2-dichloroethane, dicyclopentadiene, PPDDE, PPDDT, Dieldrin, dimethyldisulfide, Endrin, fluoroacetic acid, hexachlorocyclopentadiene, Isodrin, methylene chloride, 1,1,2,2-tetrachloroethane, tetrachloroethylene, trichloroethylene, toluene, arsenic, cadmium, chromium, lead, and mercury.

The COSs in groundwater (i.e., those displaying a VEI greater than 1), based on the most sensitive exposed population PPLV (i.e., the industrial worker) are: benzene, carbon tetrachloride, chlorobenzene, chloroform, dibromochloropropane, 1,2-dichloroethane, 1,1-dichloroethylene, dicyclopentadiene, methylene chloride, tetrachloroethylene, and trichloroethylene.

3.4 CENTRAL STUDY AREA

The Central Study Area Exposure Assessment is summarized in Tables 3-7 and 3-8. Of the 10 sites evaluated in the Central Study Area (CSA), seven were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Pesticide Pit (CSA-1a), Complex Disposal Area South (CSA-1b), Complex Disposal Area North (CSA-1c), Sanitary Landfill and Incinerator 834 (CSA-1d), Munitions Test Buildings (CSA-2a), Parking Lot/Scrap Storage (CSA-2b), and Section 36 - Low-Level OCP Detection (CSA-4). CSA-1a and CSA-1c are Priority 1 sites based on RI data in this Exposure Assessment, and identified in the FFA as sites for IRA.

The remaining three sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Munitions Test Site (CSA-2c), Chemical Sewers - North Plants (CSA-3), and Incinerator NN3601 (CSA-2d).

The COCs (i.e., those displaying an EI less than 0.1) for the CSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, benzothiazole, bicycloheptadiene, carbon tetrachloride, Chlordane, chloroacetic acid, chloroform, chlorophenylmethyl sulfide, 1,2-dichloroethane, 1,1-dichloroethylene, dicyclopentadiene, dimethyldisulfide, 2,2-bis(Para-chlorophenyl)-1,1-dichloroethene (PPDDE), Dieldrin, Endrin, fluoroacetic acid, hexachlorocyclopentadiene, Isodrin, chloroacetic acid, dibromochloropropane, 2,2-bis(Para-chlorophenyl)-1,1-trichloroethane (PPDDT), methylene chloride, methylisobutyl ketone^{1/}, 1,1,2,2-tetrachloroethane, tetrachloroethylene, arsenic, cadmium, chromium, copper, and lead.

The COSs in groundwater (i.e., those displaying a VEI greater than 1) for the CSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: benzene, carbon tetrachloride, chloroform, dibromochloropropane, 1,2-dichloroethane, 1,1-dichloroethylene, and trichloroethylene.

^{1/} Identified as a COC for the commercial worker only (see Section 4.2).

TABLE 3-7
CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|-------------------------------------|---------------------------|-------------------------|
| CSA-1a | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Direct, Indirect | |
| | Benzothiazole | Indirect | |
| | Carbon tetrachloride | Direct, Indirect | |
| | Chlordane | Direct | |
| | Chloroform | Indirect | |
| | PPDDE | Direct | |
| | Dibromochloropropane | Direct, Indirect | |
| | 1,2-Dichloroethane | Indirect | |
| | 1,1-Dichloroethylene | Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Dimethyldisulfide | Indirect | |
| | Endrin | Direct | |
| | Fluoroacetic acid | Direct | |
| | Hexachlorocyclopentadiene | Direct, Indirect | |
| | Isodrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | Methylisobutyl ketone ^{1/} | Indirect | |
| | Tetrachloroethylene | Direct, Indirect | |
| | Cadmium | Direct | |
| CSA-1b | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Indirect | |
| | Chlordane | Direct | |
| | Chloroacetic acid | Direct | |
| | Dibromochloropropane | Direct, Indirect | |
| | PPDDE | Direct | |
| | PPDDT | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Fluoroacetic acid | Direct | |
| | Methylene chloride | Indirect | |
| | Arsenic | Direct | |

^{1/} Identified as a COC for the commercial worker only (see Section 4.2).

TABLE 3-7 (Continued)
CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---------------------------|---------------------------|-------------------------|
| CSA-1c | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct | |
| | Dibromochloropropane | Cumulative | |
| | PPDDE | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Fluoroacetic acid | Direct | |
| | Hexachlorocyclopentadiene | Indirect | |
| | 1,1,2,2-Tetrachloroethane | Direct, Indirect | |
| | Tetrachloroethylene | Direct, Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Chromium | Direct | |
| | Copper | Direct | |
| | Lead | Direct | |
| CSA-1d | Aldrin | Direct, Indirect | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| | Fluoroacetic acid | Direct | |
| | Methylene chloride | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| CSA-2a | Dieldrin | Direct, Indirect | Priority 1 |
| | Fluoroacetic acid | Direct | |
| | Cadmium | Direct | |
| CSA-2b | Aldrin | Direct, Indirect | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| CSA-2c | None | None | Priority 2 |
| CSA-2d | None | None | Priority 2 |
| CSA-3 | None | None | Priority 2 |

TABLE 3-7 (Continued)
CENTRAL STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|------------------------|---------------------------|-------------------------|
| CSA-4 | Aldrin | Direct | Priority 1 |
| | Chlordane | Direct | |
| | Dieldrin | Direct | |
| | Cadmium | Direct | |

TABLE 3-8
CENTRAL STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| CSA-1a | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | Trichloroethylene | Enclosed |
| CSA-1b | Benzene | Enclosed |
| | Carbon tetrachloride | Open, Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | Trichloroethylene | Enclosed |
| CSA-1c | Benzene | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,2-Dichloroethane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Trichloroethylene | Enclosed |
| CSA-2d | 1,2-Dichloroethane | Enclosed |
| | Trichloroethylene | Enclosed |

3.5 EASTERN STUDY AREA

The Eastern Study Area Exposure Assessment is summarized in Table 3-9. Of the 26 sites evaluated in the Eastern Study Area (ESA), 14 were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Section 19 - Surface Burn (ESA-1a), Section 20 - Surface Burn (ESA-1b), Section 29 - Surface Burn (ESA-1c), Section 30 - Surface Burn (ESA-1d), Burn Pits (ESA-2a), Sanitary Landfill (ESA-2b), Open Trenches (ESA-2c), Old Toxic Storage Yard (ESA-3b), New Toxic Storage Yard (ESA-3c), Toxic Yard Plots (ESA-3d), Demilitarization Area (ESA-5), Section 6 - Chromium, Copper, Lead, and Zinc Detections (ESA-6a), Section 30 - Fluoroacetic Acid Detection (ESA-6b), and Section 30 - Arsenic Detection (ESA-6c).

The remaining 12 sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Storage Yard (ESA-3a), Concrete VX Demilitarization Pad (ESA-3e), Rail Spur and Loading Dock (ESA-3f), Open Drum Storage Area (ESA-3g), Open Storage Area Ditch (ESA-3h), Toxic Storage Plots Ditch (ESA-3i), Toxic Storage Yard Fence (ESA-3j), Trash Pit (ESA-3k), Impact Area (ESA-4a), Demolition Area (ESA-4b), Trench and Mound (ESA-4c), and Section 20 - Hexachlorobenzene Detection (ESA-6d).

The COCs in soil and sediment (i.e., those displaying an EI greater than 0.1) for the ESA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: benzene, Dieldrin, fluoroacetic acid, methylene chloride, trichloroethylene, arsenic, cadmium, chromium, lead, and zinc.

3.6 SOUTH PLANTS STUDY AREA

The South Plants Study Area Exposure Summary is summarized in Tables 3-10 and 3-11. Of the 35 sites evaluated in the SPSA, 33 were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Army Agents and Shell Pesticides Processing Area (SPSA-1a), Mounded Material (SPSA-1b), Lime Pits (SPSA-1c), Drainage Ditches (SPSA-1d), Buried M-1 Pits (SPSA-1e), Buried Barrels Containing Hexachlorocyclopentadiene (SPSA-1f), Balance of SPSA-1

TABLE 3-9
EASTERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|--|--|-------------------------|
| ESA-1a | Cadmium | Direct | Priority 1 |
| ESA-1b | Cadmium Chromium | Direct Direct | Priority 1 |
| ESA-1c | Cadmium Chromium | Direct Direct | Priority 1 |
| ESA-1d | Arsenic Cadmium Chromium | Direct Direct Direct | Priority 1 |
| ESA-2a | Benzene Arsenic Cadmium Lead Zinc | Indirect Direct Direct Direct Direct | Priority 1 |
| ESA-2b | Benzene Dieldrin Methylene chloride Trichloroethylene | Indirect Indirect Indirect Indirect | Priority 1 |
| ESA-2c | Arsenic Fluoroacetic acid | Direct Direct | Priority 1 |
| ESA-3a | None | None | Priority 2 |
| ESA-3b | Arsenic Cadmium | Direct Direct | Priority 1 |
| ESA-3c | Trichloroethylene | Indirect | Priority 1 |
| ESA-3d | Chromium | Direct | Priority 1 |
| ESA-3e | None | None | Priority 2 |

TABLE 3-9 (Continued)
EASTERN STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|------------------------------|---------------------------|-------------------------|
| ESA-3f | None | None | Priority 2 |
| ESA-3g | None | None | Priority 2 |
| ESA-3h | None | None | Priority 2 |
| ESA-3i | None | None | Priority 2 |
| ESA-3j | None | None | Priority 2 |
| ESA-3k | None | None | Priority 2 |
| ESA-4a | None | None | Priority 2 |
| ESA-4b | None | None | Priority 2 |
| ESA-4c | None | None | Priority 2 |
| ESA-5 | Fluoroacetic acid | Direct | Priority 1 |
| ESA-6a | Chromium | Direct | Priority 1 |
| ESA-6b | Fluoroacetic acid | Direct | Priority 1 |
| ESA-6c | Arsenic Fluoroacetic acid | Direct Direct | Priority 1 |
| ESA-6d | None | None | Priority 2 |

TABLE 3-10
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---------------------------|---------------------------|-------------------------|
| SPSA-1a | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Direct, Indirect | |
| | Carbon tetrachloride | Direct, Indirect | |
| | Chlordane | Direct | |
| | Chloroacetic acid | Direct | |
| | Chloroform | Direct, Indirect | |
| | Dibromochloropropane | Direct, Indirect | |
| | PPDDE | Direct | |
| | PPDDT | Direct | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Endrin | Direct | |
| | Hexachlorocyclopentadiene | Direct, Indirect | |
| | Isodrin | Direct | |
| | Methylene chloride | Indirect | |
| | 1,1,2,2-Tetrachloroethane | Direct, Indirect | |
| | Tetrachloroethylene | Direct, Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Chromium | Direct | |
| | Lead | Direct | |
| | Mercury | Direct | |
| SPSA-1b | Aldrin | Direct, Indirect | Priority 1 |
| | PPDDE | Cumulative | |
| | PPDDT | Direct | |
| | Dieldrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Lead | Direct | |

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|-------------------------------------|---------------------------|-------------------------|
| SPSA-1c | Aldrin | Direct | Priority 1 |
| | Chlordane | Direct | |
| | PPDDE | Direct | |
| | PPDDT | Direct | |
| | Dieldrin | Direct | |
| | Arsenic | Direct | |
| SPSA-1d | Aldrin | Direct | Priority 1 |
| | Dieldrin | Direct | |
| SPSA-1e | Aldrin | Direct, Indirect | Priority 1 |
| | Bicycloheptadiene | Direct, Indirect | |
| | Chlordane | Direct, Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Hexachloropentadiene | Direct, Indirect | |
| | Isodrin | Direct | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Mercury | Direct | |
| SPSA-1f | Aldrin | Direct | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| | Hexachlorocyclopentadiene | Indirect | |
| SPSA-1g | Aldrin | Direct | Priority 1 |
| | Benzene | Direct, Indirect | |
| | Chloroform | Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | Methylisobutyl ketone ^{1/} | Indirect | |
| | 1,1,2,2-Tetrachloroethane | Indirect | |
| | Arsenic | Direct | |
| | Cadmium | Direct | |
| | Chromium | Direct | |
| | Lead | Direct | |

1/ Identified as a COC for the commercial worker only (see Section 4.2).

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---------------------------|---------------------------|-------------------------|
| SPSA-2a | Aldrin | Direct | Priority 1 |
| | Benzene | Direct | |
| | Chlordane | Direct | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct | |
| | Methylene chloride | Direct, Indirect | |
| | 1,1,2,2-Tetrachloroethane | Direct | |
| SPSA-2b | Aldrin | Direct, Indirect | Priority 1 |
| | Benzene | Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | 1,1,2,2-Tetrachloroethane | Direct, Indirect | |
| SPSA-2c | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| SPSA-2d | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Cumulative | |
| | Dieldrin | Direct | |
| SPSA-2e | Benzene | Direct, Indirect | Priority 1 |
| | Dibromochloropropane | Direct, Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Chromium | Direct | |
| SPSA-3a | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct, Indirect | |
| | PPDDT | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Isodrin | Direct, Indirect | |

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|----------------------------|---------------------------|-------------------------|
| SPSA-3b | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct, Indirect | |
| | Chloroform | Indirect | |
| | Chlorophenylmethyl sulfide | Direct, Indirect | |
| | PPDDE | Direct, Indirect | |
| | PPDDT | Direct, Indirect | |
| | 1,2-Dichloroethane | Indirect | |
| | Dicyclopentadiene | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Hexachlorocyclopentadiene | Direct, Indirect | |
| | Isodrin | Direct, Indirect | |
| | 1,1,2,2-Tetrachloroethane | Indirect | |
| | Arsenic | Direct | |
| SPSA-3c | Aldrin | Direct, Indirect | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| | Methylene chloride | Indirect | |
| | Cadmium | Direct | |
| | Chromium | Direct | |
| | Lead | Direct | |
| SPSA-3d | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct, Indirect | |
| | PPDDT | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| SPSA-3e | Dicyclopentadiene | Indirect | Priority 1 |
| | Dieldrin | Direct, Indirect | |
| SPSA-4a | Aldrin | Direct, Indirect | Priority 1 |
| | Chlordane | Direct | |
| | PPDDT | Direct | |
| | PPDDE | Direct, Indirect | |
| | Dieldrin | Direct, Indirect | |
| | Isodrin | Direct, Indirect | |

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|--------------------|---|--|-------------------------|
| SPSA-4a (cont.) | Methylene chloride Chromium Lead | Direct, Indirect Direct Direct | |
| SPSA-4b | Aldrin Dieldrin Methylene chloride | Direct, Indirect Direct, Indirect Indirect | Priority 1 |
| SPSA-5a | Dieldrin Cadmium | Direct, Indirect Direct | Priority 1 |
| SPSA-5b | Aldrin Chlordane Dicyclopentadiene Dieldrin Methylene chloride Trichloroethylene Chromium | Direct, Indirect Direct Indirect Direct, Indirect Indirect Indirect Direct | Priority 1 |
| SPSA-6 | Dieldrin Arsenic | Direct Direct | Priority 1 |
| SPSA-7a | Dieldrin | Direct | Priority 1 |
| SPSA-7b | Aldrin PPDDT Dieldrin Arsenic | Direct, Indirect Direct, Indirect Direct Direct | Priority 1 |
| SPSA-7c | Benzene Dieldrin | Direct, Indirect Direct | Priority 1 |
| SPSA-8a | Aldrin Chlordane PPDDT Dieldrin Hexachlorocyclopentadiene | Direct, Indirect Direct, Indirect Direct, Indirect Direct, Indirect Direct, Indirect | Priority 1 |

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|--------------------|---|--|-------------------------|
| SPSA-8a (cont.) | Isodrin Arsenic | Direct, Indirect Direct | |
| SPSA-8b | Aldrin Dieldrin | Direct, Indirect Direct, Indirect | Priority 1 |
| SPSA-8c | None | None | Priority 2 |
| SPSA-9a | Aldrin Chlordane PPDDE PPDDT Dieldrin | Direct, Indirect Direct, Indirect Direct, Indirect Direct Direct, Indirect | Priority 1 |
| SPSA-9b | None | None | Priority 2 |
| SPSA-10 | Aldrin Benzene Carbon tetrachloride Chloroacetic acid Chloroform Dibromochloropropane PPDDE PPDDT 1,2-Dichloroethane Dieldrin Hexachlorocyclopentadiene Isodrin Tetrachloroethylene Supona Arsenic Cadmium Chromium | Direct, Indirect Direct Direct, Indirect Direct Direct, Indirect Direct, Indirect Direct Direct Direct Direct Direct Direct Direct Direct Direct Direct Direct | Priority 1 |
| SPSA-11 | Aldrin Dieldrin | Direct Direct | Priority 1 |

TABLE 3-10 (Continued)
SOUTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---|--------------------------------------|-------------------------|
| SPSA-12 | Aldrin Dieldrin | Direct Direct | Priority 1 |
| SPSA-12a | Aldrin Dieldrin 1,1,2,2-Tetrachloroethane | Direct, Indirect Direct Direct | Priority 1 |
| SPSA-12b | Aldrin Dieldrin | Direct, Indirect Direct, Indirect | Priority 1 |

TABLE 3-11
SOUTH PLANTS STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| SPSA-1a | Benzene | Open |
| | Carbon tetrachloride | Open |
| | 1,1-Dichloroethylene | Open |
| SPSA-1b | Aldrin | Enclosed |
| | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | Tetrachloroethylene | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-1e | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chlorobenzene | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Methylene chloride | Enclosed |
| | Tetrachloroethylene | Enclosed |
| | 1,1,2-Trichloroethylene | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-1f | Aldrin | Enclosed |
| | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Dicyclopentadiene | Enclosed |
| | Dimethyldisulfide | Enclosed |
| | Hexachlorocyclopentadiene | Enclosed |
| | Methylisobutyl ketone | Enclosed |
| | Methylene chloride | Enclosed |
| | Tetrachloroethylene | Enclosed |
| | Trichloroethylene | Enclosed |

TABLE 3-11 (Continued)
SOUTH PLANTS STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| SPSA-1g | Benzene | Enclosed |
| | Carbon tetrachloride | Open, Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |
| | 1,1-Dichloroethylene | Enclosed |
| | Hexachlorocyclopentadiene | Enclosed |
| | Methylene chloride | Enclosed |
| | Tetrachloroethylene | Enclosed |
| | 1,1,2-Trichloroethane | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-2a | Benzene | Open |
| SPSA-2b | Benzene | Open, Enclosed |
| SPSA-2c | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| SPSA-2d | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| SPSA-2e | Benzene | Open, Enclosed |
| | Bicycloheptadiene | Enclosed |
| | Chloroform | Enclosed |
| SPSA-3c | Carbon tetrachloride | Enclosed |
| | Dicyclopentadiene | Enclosed |
| SPSA-3d | Chloroform | Enclosed |
| | Dicyclopentadiene | Enclosed |
| SPSA-3e | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| | Dicyclopentadiene | Enclosed |
| SPSA-4b | Dicyclopentadiene | Enclosed |

TABLE 3-11 (Continued)
SOUTH PLANTS STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|-----------------------------|---------------------------|
| SPSA-5a | Carbon tetrachloride | Enclosed |
| | Chloroform | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-6 | Carbon tetrachloride | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-7c | Dicyclopentadiene | Enclosed |
| SPSA-9a | Carbon tetrachloride | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-9b | Carbon tetrachloride | Enclosed |
| | Trichloroethylene | Enclosed |
| SPSA-12a | Benzene | Enclosed |
| | Carbon tetrachloride | Enclosed |
| SPSA-12b | Benzene | Enclosed |
| | Bicycloheptadiene | Enclosed |
| | Chloroform | Enclosed |
| | Dibromochloropropane | Enclosed |

(SPSA-1g), South Tank Farm Area (SPSA-2a), Open Storage Area (SPSA-2b), Salvage Yard (SPSA-2c), Drainage Ditches (SPSA-2d), Balance of SPSA-2 (SPSA-2e), Drainage Ditches (SPSA-3a), Salt Storage Pad (SPSA-3b), Former Tank Storage Area (SPSA-3c), Revetted Tank Storage Area (SPSA-3d), Balance of SPSA-3 (SPSA-3e), Drainage Ditches (SPSA-4a), Balance of SPSA-4 (SPSA-4b), Drainage Ditch (SPSA-5a), Balance of SPSA-5 (SPSA-5b), Hydrazine Facility (SPSA-6), Drainage Ditches (SPSA-7a), Lagoon (SPSA-7b), Balance of SPSA-7 (SPSA-7c), Sanitary Landfill (SPSA-8a), Drainage Ditches (SPSA-8b), Drainage Ditch (SPSA-9a), Chemical Sewer System (SPSA-10), Sanitary Sewer System (SPSA-11), Processs Water System (SPSA-12), Aeration Basin (SPSA-12a), and Sedimentation Pond (SPSA-12b). SPSA-1e, SPSA-2a, SPSA-2b, SPSA-2c, SPSA-2d, SPSA-2e, SPSA-6, and SPSA-11 are Priority 1 sites based on RI data in this Exposure Assessment, and identified in the FFA as sites for IRA.

The remaining two sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Balance of SPSA-8 (SPSA-8c) and Balance of SPSA-9 (SPSA-9b).

The COCs (i.e., those displaying an EI greater than 0.1) for the SPSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, bicycloheptadiene, carbon tetrachloride, Chlordane, chloroacetic acid, chloroform, chlorophenylmethyl sulfide, dibromochloropropane, 1,2-dichloroethane, PPDDE, PPDDT, dicyclopentadiene, Dieldrin, Endrin, hexachlorocyclopentadiene, Isodrin, methylene chloride, methylisobutyl ketone^{1/}, Supona, 1,1,2,2-tetrachloroethane, tetrachloroethylene, trichloroethylene, arsenic, cadmium, chromium, lead, and mercury.

The COSs in groundwater (i.e., those displaying a VEI greater than 1) for the SPSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, bicycloheptadiene, carbon tetrachloride, chlorobenzene, chloroform, dibromochloropropane, 1,1-dichloroethylene, dicyclopentadiene, dimethyldisulfide,

^{1/} Identified as a COC for the commercial worker only (see Section 4.2).

hexachlorocyclopentadiene, methylene chloride, methylisobutyl ketone, tetrachloroethylene, 1,1,2-trichloroethane, and trichloroethylene.

3.7 NORTH PLANTS STUDY AREA

The North Plants Study Area Exposure Summary is summarized in Tables 3-12 and 3-13. Of the 16 sites that were evaluated in the North Plants Study Area (NPSA), ten sites were designated as Priority 1 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Chemical Sewer System (NPSA-1), Tank Farm (NPSA-2), GB Manufacturing Area (NPSA-3), Fuze and Detonator Magazine (NPSA-4), Special Weapons Plant (NPSA-5), Underground Spill Area (NPSA-6), Drainage Ditch (NPSA-8c), Chromium Detection (NPSA-9b), Benzene and Zinc Detections (NPSA-9d), and Arsenic Detection (NPSA-9f).

The remaining six sites were designated as Priority 2 sites based on the most sensitive exposed population PPLV (i.e., the industrial worker). These include: Surface Spill Area (NPSA-7), Drainage Ditch (NPSA-8a), Drainage Ditch (NPSA-8b), Railroad Tracks (NPSA-9a), Zinc Detection (NPSA-9c), and Railroad Tracks (NPSA-9e).

The COCs in soil and sediment (i.e., those displaying a cumulative EI less than 0.1) for the NPSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: Aldrin, benzene, chloroacetic acid, chloroform, Dieldrin, tetrachloroethylene, arsenic, cadmium, and chromium.

The COSs in groundwater (i.e., those with a VEI greater than 1) for the NPSA, based on the most sensitive exposed population PPLV (i.e., the industrial worker), are: carbon tetrachloride and 1,1-dichloroethylene.

TABLE 3-12
NORTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|---|--|-------------------------|
| NPSA-1 | Cadmium | Direct | Priority 1 |
| NPSA-2 | Benzene Chloroform Tetrachloroethylene | Indirect Indirect Indirect | Priority 1 |
| NPSA-3 | Dieldrin Cadmium | Direct Direct | Priority 1 |
| NPSA-4 | Chloroacetic acid | Direct | Priority 1 |
| NPSA-5 | Benzene Arsenic Cadmium | Indirect Direct Direct | Priority 1 |
| NPSA-6 | Aldrin Benzene Dieldrin Arsenic Cadmium | Direct Indirect Direct, Indirect Direct Direct | Priority 1 |
| NPSA-7 | None | None | Priority 2 |
| NPSA-8a | None | None | Priority 2 |
| NPSA-8b | None | None | Priority 2 |
| NPSA-8c | Arsenic | Direct | Priority 1 |
| NPSA-9a | None | None | Priority 2 |
| NPSA-9b | Chromium | Direct | Priority 1 |
| NPSA-9c | None | None | Priority 2 |
| NPSA-9d | Benzene | Indirect | Priority 1 |

TABLE 3-12 (Continued)
NORTH PLANTS STUDY AREA COC EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Concern | Critical Exposure Pathway | Priority Recommendation |
|-----------|------------------------|---------------------------|-------------------------|
| NPSA-9e | None | None | Priority 2 |
| NPSA-9f | Arsenic | Direct | Priority 1 |

TABLE 3-13
NORTH PLANTS STUDY AREA COS EXPOSURE SUMMARY
EXPOSED POPULATION: INDUSTRIAL WORKER

| Site Name | Contaminant of Significance | Critical Exposure Pathway |
|-----------|--|---------------------------|
| NPSA-2 | Carbon tetrachloride 1,1-Dichloroethylene | Enclosed Enclosed |
| NPSA-4 | 1,1-Dichloroethylene | Enclosed |
| NPSA-6 | 1,1-Dichloroethylene | Enclosed |
| NPSA-7 | Carbon tetrachloride 1,1-Dichloroethylene | Enclosed Enclosed |
| NPSA-8b | 1,1-Dichloroethylene | Enclosed |
| NPSA-9d | Carbon tetrachloride 1,1-Dichloroethylene | Enclosed Enclosed |

4.0 ARSENAL-WIDE PERSPECTIVE OF THE EXPOSURE ASSESSMENT

To ensure that the objectives of the Human Health Exposure Assessment were met consistent with current U.S. Environmental Protection Agency (EPA) guidance, supplemental screening analyses were made to account for underestimation of exposure, additivity, and Reasonable Maximum Exposure (RME) parameter estimates in deriving the Draft PPLVs. Each of these screens is discussed below.

4.1 ADDITIONAL SCREENING EVALUATIONS

4.1.1 Underestimation of Exposure

As was discussed in Volume VI-A, Section 2.1.2.3 of the Exposure Assessment Report, unacceptable exposure is normally considered in cases where the EI is greater than unity ($EI > 1$). To account for the potential of underestimating exposure attributed to an uncertainty in the Draft PPLV values, an EI of 0.1 was considered as an indication of unacceptable exposure. Therefore, for all pathways and exposed populations, a chemical measured at a site for which its maximum concentration was one-tenth of its cumulative Draft PPLV value was considered as a COC. This condition was set as a requirement in the site-by-site assessments (see Volumes VI-B through VI-H). Any site for which an EI value of at least 0.1 was computed for any of the contaminants measured was recommended as a Priority 1 site. In this manner, contaminants which could potentially contribute to the contamination being significant at a site were not prematurely rejected from consideration as potential COCs prior to the risk characterization.

4.1.2 Additivity

To determine whether additional chemicals should be considered as COCs for each site examined, additive effects were computed for carcinogens and noncarcinogens using the appropriate exposure pathways for industrial workers based on the following approach.

4.1.2.1 Carcinogens

For carcinogens, the risk for each contaminant measured was estimated by multiplying the computed EI_{max} by an acceptable risk level of 1×10^{-6} consistent with EPA guidance (EPA, 1990). Mathematically, the individual risk from chemical i can be expressed as:

$$Risk_i = EI_{i, max} * 10^{-6}$$

The individual chemical risk values were then summed to obtain the total site risk expressed as:

$$Risk_{TOTAL} = \sum_i Risk_i$$

If the total risk for this site was greater than 10^{-6} , then the chemicals contributing to that excess risk were identified and deleted and the total residual risk computed. The carcinogens contributing to the excess risk were then included in the COC list.

4.1.2.2 Noncarcinogens

A similar procedure was used for noncarcinogens. The hazard index ($HI_{i, max}$) for each noncarcinogen at a site was computed as:

$$HI_{i, max} = \frac{C_{i, max}}{PPLV_i}$$

where $C_{i, max}$ is the maximum soil concentration of i measured at the site and $PPLV_i$ is its Draft PPLV for an industrial worker. The Total Hazard Index (HI_{TOTAL}) for the site was then computed as:

$$HI_{TOTAL} = \sum_i HI_{i, max}$$

If HI_{TOTAL} was greater than unity, then the chemicals contributing to that excess HI were identified and deleted and the total residual HI computed. The chemicals contributing to the excess HI were then included in the COC list. It should be noted here that this screen was actually performed for all chemicals at a site (i.e., both carcinogens and noncarcinogens) since carcinogens can contribute to adverse noncarcinogenic health effects as well. The results of the additivity screening process are presented in Appendix A.

4.1.3 Reasonable Maximum Exposure (RME) Parameter Estimates

The effect of assigning RME values to the parameters of the Draft PPLV equations for the exposed populations considered resulted in a reduction of the PPLV values as follows. For the direct pathways the PPLVs were reduced by an average factor of 20 for regulated and casual visitors, 7 for recreational visitors, 19 for commercial workers, and 6 for industrial workers. The RME input parameters are summarized in Table 4-1. RME direct soil exposure PPLVs are presented in Table 4-2.

For the indirect pathways the PPLV changes were estimated for an exemplary site North Central Study Area (NCSA-3/Basin F), one of the most contaminated areas on RMA. Tables 4-3 through 4-7 present Draft PPLVs, EIs, and VEIs for each site contaminant. The depth to groundwater below Site NCSA-3 is greater than 10 ft; therefore, the enclosed space vapor inhalation exposure pathway is included in the calculation of the cumulative Draft PPLVs. The COCs (i.e., those contaminants whose maximum detected concentrations result in an EI greater than 1.0), are summarized below together with the associated critical exposure pathways and the affected population (Table 4-8).

The results of the RME screen indicate that there are no additional COCs from the MLE site evaluation for NCSA-3.

4.1.4 Conclusion

The results of the three screening evaluation described above provide greater certainty that all contaminants which could potentially contribute to unacceptable human health risk have been identified and will be considered further in the risk characterization process.

TABLE 4-1
REASONABLE MAXIMUM EXPOSURE (RME) ESTIMATES
FOR THE EXPOSURE ASSESSMENT SCREENING EVALUATION

| Parameter Name | Recreational Visitors | | | Regulated/Casual Visitors | | | Commercial Workers | Industrial Workers |
|---|-----------------------|---|---------------------|---|-------------------------|-------------------------|--------------------|--------------------|
| Soil Ingestion | 2 1/2 6 Adult | 250 mg/day 250 mg/day 100 mg/day | 2 1/2 6 Adult | 250 mg/day 250 mg/day 100 mg/day | 100 mg/day | 100 mg/day | 100 mg/day | 100 mg/day |
| Breathing Rate | 2 1/2 6 Adult | 8.3 l/min 20.3 l/min 24 l/min | 2 1/2 6 Adult | 4.2 l/min 13.3 l/min 10 l/min | 4.8 m ³ /day | 20 m ³ /day | | |
| Dust Load Factor | | 0.042 mg/m ³ | | 0.042 mg/m ³ | 0.021 mg/m ³ | 0.042 mg/m ³ | | |
| Pulmonary Retention | | 0.75 | | 0.75 | 0.75 | 0.75 | | |
| Pulmonary Absorption (All compounds) | | 1 (100 percent) | | 1 (100 percent) | 1 (100 percent) | 1 (100 percent) | | |
| Daily Exposure Period | | 6 hours | | 6 hours | 8 hours | 8 hours | | |
| Annual Exposure Frequency | | 108 days/year | | 108 days/year | 253 days/year | 253 days/year | | |
| Lifetime Exposure Duration | | 70 years | | 30 years | 30 years | 30 years | | |
| Skin Surface Area | 2 1/2 6 Adult | 2,100 cm ² 2,500 cm ² 4,500 cm ² | 2 1/2 6 Adult | 2,100 cm ² 2,500 cm ² 4,500 cm ² | 1,120 cm ² | 3200 cm ² | | |

TABLE 4-1 (Continued)
 REASONABLE MAXIMUM EXPOSURE (RME) ESTIMATES
 FOR THE EXPOSURE ASSESSMENT SCREENING EVALUATION

| Parameter Name | Recreational Visitors | Regulated/Casual Visitors | Commercial Workers | Industrial Workers |
|--|---|---|----------------------------------|----------------------------------|
| Soil Covering | 0.51 mg/cm ² | 0.51 mg/cm ² | 0.11 mg/cm ² | 1.5 mg/cm ² |
| Soil Matrix Factor | 1.0 | 1.0 | 1.0 | 1.0 |
| Dermal Absorption (All compounds) | 0.01 (metals) 0.10 (organics) | 0.01 (metals) 0.10 (organics) | 0.01 (metals) 0.10 (organics) | 0.01 (metals) 0.10 (organics) |
| Body Weight | Adult: 70 kg Child: 10th percentile(M&F) | Adult: 70 kg Child: 10th percentile(M&F) | 70 kg | 70 kg |
| Area of Basement | NA ^v | NA | 138 m ² | 138 m ² |
| Basement Volume | NA | NA | 210 m ³ | 210 m ³ |
| Basement Volume/ Surface Area Ratio | NA | NA | 1.52 m | 1.52 m |
| Depth of Basement Below Soil | NA | NA | 2 m | 2 m |
| Volume of Basement Air Inhaled | NA | NA | 0.75 m ³ /day | 0.75 m ³ /day |
| Time Per Basement Air Change | NA | NA | 0.069 days/ exchange | 0.069 days/ exchange |
| Soil Temperature | NA | NA | 13°C | 13°C |

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TABLE 4-1 (Continued)
 REASONABLE MAXIMUM EXPOSURE (RME) ESTIMATES
 FOR THE EXPOSURE ASSESSMENT SCREENING EVALUATION

| Parameter Name | Recreational Visitors | Regulated/Casual Visitors | Commercial Workers | Industrial Workers |
|-------------------------|-----------------------|---------------------------|---------------------------------------|---------------------------------------|
| Soil Density | NA | NA | 1.7 g/cm ³ | 1.75 g/cm ³ |
| Soil Porosity Air Space | NA | NA | 0.45 cm ³ /cm ³ | 0.45 cm ³ /cm ³ |
| Soil Organic Content | NA | NA | 0.001 (fraction) | 0.001 (fraction) |

1/ Not Applicable

TABLE 4-2
RME DIRECT SOIL EXPOSURE PATHWAY PPLVs^{1/}

| Chemical | Recreational Visitors (mg/kg) | | Regulated/Casual Visitors (mg/kg) | | Commercial Worker (mg/kg) | | Industrial Worker (mg/kg) | |
|---------------------------------|----------------------------------|--------|--------------------------------------|--------|------------------------------|--------|------------------------------|--------|
| | MLE | RME | MLE | RME | MLE | RME | MLE | RME |
| Aldrin | 0.21 | 0.030 | 1.50 | 0.07 | 1.9 | 0.098 | 0.12 | 0.019 |
| Arsenic | 3.4 | 0.84 | 19 | 2.0 | 17 | 1.2 | 1.5 | 0.81 |
| Atrazine | 18,000 | 2,500 | 41,000 | 2,100 | 23,000 | 3,500 | 4,200 | 690 |
| Benzene | 120 | 17 | 860 | 40 | 1,100 | 56 | 67 | 11 |
| Benzothiazole | 16,000 | 2,400 | 39,000 | 2,000 | 22,000 | 3,300 | 4,000 | 650 |
| Bicycloheptadiene | 140,000 | 20,000 | 320,000 | 16,000 | 180,000 | 27,000 | 33,000 | 5,300 |
| Cadmium | 58 | 87 | 450 | 400 | 360 | 280 | 7.6 | 44 |
| Carbon tetrachloride | 27 | 3.9 | 200 | 9.1 | 250 | 13 | 15 | 2.5 |
| Chlordane | 2.7 | 0.39 | 20 | 0.91 | 25 | 1.3 | 1.5 | 0.25 |
| Chloroacetic acid | 7,000 | 1,000 | 16,000 | 840 | 9,200 | 1,400 | 1,700 | 270 |
| Chlorobenzene | 68,000 | 10,000 | 160,000 | 8,400 | 88,000 | 14,000 | 15,000 | 2,700 |
| Chloroform | 560 | 81 | 4,000 | 190 | 5,100 | 260 | 310 | 51 |
| Chlorophenylmethyl sulfide | 70,000 | 10,000 | 160,000 | 8,300 | 91,000 | 14,000 | 17,000 | 2,700 |
| Chlorophenylmethyl sulfone | 70,000 | 10,000 | 160,000 | 8,300 | 91,000 | 14,000 | 17,000 | 2,700 |
| Chlorophenylmethyl sulfoxide | 70,000 | 10,000 | 160,000 | 8,300 | 91,000 | 14,000 | 17,000 | 2,700 |
| Chromium | 8.8 | 15 | 69 | 82 | 55 | 59 | 1.2 | 7.1 |
| Copper | 250,000 | 48,000 | 420,000 | 36,000 | 180,000 | 30,000 | 57,000 | 20,000 |
| Dibromochloropropane | 2.5 | 0.36 | 18.0 | 0.84 | 180,000 | 1.2 | 1.4 | 0.23 |
| PPDDE (isomer) | 10 | 1.5 | 74 | 3.4 | 93 | 4.8 | 5.7 | 0.93 |
| PPDDT (isomer) | 10 | 1.5 | 74 | 3.4 | 93 | 4.8 | 5.7 | 0.93 |
| 1,1-Dichloroethane | 39 | 5.6 | 280 | 13 | 360 | 18 | 23 | 3.5 |
| 1,2-Dichloroethane | 39 | 5.6 | 280 | 13 | 350 | 18 | 22 | 3.5 |
| 1,1-Dichloroethylene | 5.9 | 0.86 | 43 | 2.0 | 54 | 2.8 | 3.2 | 0.54 |
| 1,2-Dichloroethylene | 70,000 | 10,000 | 160,000 | 8,400 | 92,000 | 14,000 | 17,000 | 2,700 |

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TABLE 4-2 (Continued)
RME DIRECT SOIL EXPOSURE PATHWAY PPLVs

| Chemical | Recreational Visitors (mg/kg) | | Regulated/Casual Visitors (mg/kg) | | Commercial Worker (mg/kg) | | Industrial Worker (mg/kg) | |
|------------------------------------|----------------------------------|---------|--------------------------------------|---------|------------------------------|---------|------------------------------|--------|
| | MLE | RME | MLE | RME | MLE | RME | MLE | RME |
| Dicyclopentadiene | 18,000 | 11,000 | 54,000 | 11,000 | 17,000 | 16,000 | 1,200 | 2,700 |
| Dieldrin | 0.22 | 0.031 | 1.6 | 0.073 | 2.0 | 0.10 | 0.12 | 0.020 |
| Diisopropylmethyl phosphonate | 280,000 | 41,000 | 660,000 | 34,000 | 370,000 | 57,000 | 68,000 | 11,000 |
| Dimethyldisulfide | 29,000 | 4,100 | 67,000 | 3,400 | 37,000 | 5,700 | 6,900 | 1,100 |
| Dimethylmethyl phosphonate | 63,000 | 9,100 | 150,000 | 7,600 | 82,000 | 13,000 | 15,000 | 2,500 |
| Dithiane | 35,000 | 5,100 | 83,000 | 4,200 | 46,000 | 7,100 | 8,500 | 1,400 |
| Endrin | 1,000 | 150 | 2,500 | 130 | 1,400 | 210 | 250 | 41 |
| Ethylbenzene | 350,000 | 51,000 | 830,000 | 42,000 | 460,000 | 71,000 | 85,000 | 14,000 |
| Fluoroacetic acid | 16 | 2.4 | 39 | 2.0 | 22 | 3.3 | 4.0 | 0.65 |
| Hexachlorocyclo- pentadiene | 5,700 | 2,800 | 17,000 | 2,600 | 5,400 | 4,000 | 380 | 700 |
| Isodrin | 250 | 35 | 580 | 29 | 320 | 50 | 59 | 9.6 |
| Isopropyl methyl- phosphonate | >1.0E+06 | 150,000 | 1.0E+06 | 130,000 | >1.0E+06 | 210,000 | 250,000 | 41,000 |
| Isopropylmethyl phosphonic acid | >1.0E+06 | 150,000 | 1.0E+06 | 130,000 | >1.0E+06 | 210,000 | 250,000 | 41,000 |
| Lead | 9,200 | 1,800 | 16,000 | 1,300 | 6,500 | 1,100 | 2,200 | 740 |
| Lewisite | 70 | 10 | 160 | 8.4 | 92 | 14 | 17 | 2.7 |
| Lewisite Oxide | 70 | 10 | 160 | 8.4 | 92 | 14 | 17 | 2.7 |
| Malathion | 70,000 | 10,000 | 160,000 | 8,400 | 92,000 | 14,000 | 17,000 | 2,700 |
| Mercury | 1,900 | 380 | 3,300 | 290 | 1,400 | 240 | 460 | 160 |
| Methylene chloride | 450 | 66 | 3,300 | 150 | 4,100 | 220 | 250 | 42 |

TABLE 4-2 (Continued)
RME DIRECT SOIL EXPOSURE PATHWAY PPLVs

| Chemical | Recreational Visitors (mg/kg) | | Regulated/Casual Visitors (mg/kg) | | Commercial Worker (mg/kg) | | Industrial Worker (mg/kg) | |
|---------------------------|----------------------------------|---------|--------------------------------------|---------|------------------------------|----------|------------------------------|---------|
| | MLE | RME | MLE | RME | MLE | RME | MLE | RME |
| Methylisobutyl ketone | 170,000 | 25,000 | 410,000 | 21,000 | 220,000 | 35,700 | 40,000 | 6,900 |
| N-Nitrosodimethylamine | 0.07 | 0.01 | 0.51 | 0.024 | 0.64 | 0.033 | 0.039 | 0.0064 |
| 1,4-Oxathiane | 100,000 | 15,000 | 250,000 | 13,000 | 140,000 | 21,000 | 25,000 | 4,100 |
| Parathion | 21,000 | 3,000 | 50,000 | 2,500 | 28,000 | 4,300 | 5,100 | 820 |
| Sarin | 3.0 | 0.44 | 7.1 | 0.36 | 3.9 | 0.61 | 0.73 | 0.12 |
| Sulfur mustard | 12 | 1.7 | 86 | 4.0 | 110 | 5.6 | 6.7 | 1.1 |
| Supona | 530 | 76 | 1,200 | 63 | 690 | 110 | 130 | 21 |
| 1,1,2,2-Tetrachloroethane | 18 | 2.5 | 130 | 5.9 | 160 | 8.3 | 9.9 | 1.6 |
| Tetrachloroethylene | 70 | 10 | 500 | 24 | 650 | 33 | 41 | 6.4 |
| Thiodiglycol | 140,000 | 20,000 | 330,000 | 17,000 | 180,000 | 28,000 | 34,000 | 5,500 |
| Toluene | >1.0E+06 | 150,000 | >1.0E+06 | 130,000 | >1.0E+06 | 210,000 | 260,000 | 41,000 |
| 1,1,1-Trichloroethane | 320,000 | 46,000 | 750,000 | 38,000 | 420,000 | 64,000 | 78,000 | 12,000 |
| 1,1,2-Trichloroethane | 60 | 8.6 | 430 | 20 | 540 | 28 | 34 | 5.5 |
| Trichloroethylene | 320 | 46 | 2,300 | 110 | 2,900 | 150 | 180 | 29 |
| Vapona | 12 | 1.7 | 86 | 4.0 | 110 | 5.6 | 6.7 | 1.1 |
| Xylene | >1.0E+06 | 1.0E+06 | >1.0E+06 | 830,000 | >1.0E+06 | >1.0E+06 | 880,000 | 270,000 |
| Zinc | >1.0E+06 | 260,000 | >1.0E+06 | 200,000 | >1.0E+06 | 160,000 | 140,000 | 100,000 |

1/ MLE-RME/PPLVs were computed using Version 3.1.

TABLE 4-3
RME EXPOSURE EVALUATIONS FOR REGULATED VISITORS

| CONTAMINANT | DIRECT PPLV (mg/kg) | INDIRECT PPLV (mg/kg) | CUMULATIVE PPLV (mg/kg) | DIRECT EI | INDIRECT EI | CUMULATIVE EI | VEI OPH |
|----------------------------------|---------------------------|-----------------------------|-------------------------------|--------------|----------------|------------------|------------|
| ALDRIN | 7.0E-02 | 1.0E+06 | 7.0E-02 | 5.7E+04* | 7.6E-03a | 5.7E+04* | 0.0E+00 |
| ATRAZINE | 2.1E+03 | 0.0E+00 | 2.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.2E-14 |
| BENZENE | 4.0E+01 | 6.6E+04 | 4.0E+01 | 7.5E-02 | 4.6E-05 | 7.5E-02 | 9.4E-07 |
| BENZOTHAZOLE | 2.0E+03 | 0.0E+00 | 2.0E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.7E-09 |
| BICYCLOHEPTADIENE | 1.6E+04 | 1.8E+07 | 1.6E+04 | 1.9E-03 | 1.6E-06 | 1.9E-03 | 6.2E-09 |
| CHLORDANE | 9.1E-01 | 0.0E+00 | 9.1E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.2E-07 |
| CHLOROACETIC ACID | 8.4E+02 | 0.0E+00 | 8.4E+02 | 9.4E+00* | 0.0E+00 | 9.4E+00* | 0.0E+00 |
| CHLOROBENZENE | 8.4E+03 | 7.2E+06 | 8.4E+03 | 6.0E-04 | 6.9E-07 | 6.0E-04 | 2.7E-09 |
| CHLOROFORM | 1.9E+02 | 7.7E+04 | 1.9E+02 | 3.7E-01 | 9.1E-04 | 3.7E-01 | 7.1E-08 |
| CHLOROPHENYLMETHYL SULFIDE | 8.3E+03 | 1.0E+06 | 8.3E+03 | 8.4E-02 | 2.5E-05a | 8.4E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFONE | 8.3E+03 | 1.0E+06 | 8.3E+03 | 3.6E-02 | 1.3E-05a | 3.6E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFOXIDE | 8.3E+03 | 1.5E+07 | 8.3E+03 | 8.4E-03 | 4.7E-06 | 8.4E-03 | 1.6E-10 |
| PPDE | 3.4E+00 | 0.0E+00 | 3.4E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.7E-09 |
| PPDT | 3.4E+00 | 0.0E+00 | 3.4E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.1E-08 |
| DIBROMOCHLOROPROPANE | 8.4E-01 | 8.1E+02 | 8.4E-01 | 2.4E+01* | 2.5E-02 | 2.4E+01* | 2.5E-08 |
| 1,2-DICHLOROETHANE | 1.3E+01 | 4.8E+04 | 1.3E+01 | 7.7E-02 | 2.1E-05 | 7.7E-02 | 2.6E-06 |
| DICYCLOPENTADIENE | 1.1E+04 | 1.6E+04 | 6.4E+03 | 3.7E-01 | 2.5E-01 | 6.2E-01 | 0.0E+00 |
| DIELDRI | 7.3E-02 | 1.0E+06 | 7.3E-02 | 2.7E+04* | 9.3E-03a | 2.7E+04* | 0.0E+00 |
| DIISOPROPYLMETHYL PHOSPHONATE | 3.4E+04 | 4.6E+07 | 3.4E+04 | 8.9E-05 | 6.5E-08 | 8.9E-05 | 4.4E-09 |
| DIMETHYLDISULFIDE | 3.4E+03 | 1.2E+07 | 3.4E+03 | 2.1E-02 | 6.0E-06 | 2.1E-02 | 2.0E-09 |
| DIMETHYLMETHYL PHOSPHONATE | 7.6E+03 | 0.0E+00 | 7.6E+03 | 9.3E-03 | 0.0E+00 | 9.3E-03 | 0.0E+00 |
| DITHIANE | 4.2E+03 | 0.0E+00 | 4.2E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| ENDRIN | 1.3E+02 | 1.0E+06 | 1.3E+02 | 7.1E+00* | 4.6E-06a | 7.1E+00* | 0.0E+00 |
| ETHYLBENZENE | 4.2E+04 | 1.4E+08 | 4.2E+04 | 1.9E-04 | 5.6E-08 | 1.9E-04 | 1.8E-10 |
| HEXACHLOROCYCLOPENTADIENE | 2.6E+03 | 0.0E+00 | 2.6E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-06 |
| ISODRIN | 2.9E+01 | 1.0E+06 | 2.9E+01 | 1.0E+02* | 7.3E-05a | 1.0E+02* | 0.0E+00 |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.3E+05 | 0.0E+00 | 1.3E+05 | 3.6E-02 | 0.0E+00 | 3.6E-02 | 0.0E+00 |
| MALATHION | 8.4E+03 | 0.0E+00 | 8.4E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.7E-14 |
| METHYLISSOBUTYL KETONE | 2.1E+04 | 4.1E+06 | 2.1E+04 | 1.9E-05 | 2.4E-07 | 1.9E-05 | 5.2E-11 |
| METHYLENE CHLORIDE | 1.5E+02 | 8.3E+05 | 1.5E+02 | 0.0E+00 | 3.6E-06 | 3.6E-06 | 0.0E+00 |
| 1,4-OXATHIANE | 1.3E+04 | 0.0E+00 | 1.3E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SUPONA | 6.3E+01 | 0.0E+00 | 6.3E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.6E-14 |
| 1,1,2,2-TETRACHLOROETHANE | 5.9E+00 | 8.8E+04 | 5.9E+00 | 5.1E+00* | 3.4E-04 | 5.1E+00* | 0.0E+00 |
| TETRACHLOROETHYLENE | 2.4E+01 | 3.5E+05 | 2.4E+01 | 1.7E+00* | 1.2E-04 | 1.7E+00* | 2.9E-08 |
| THIODIGLYCOL | 1.7E+04 | 0.0E+00 | 1.7E+04 | 3.4E-02 | 0.0E+00 | 3.4E-02 | 0.0E+00 |
| TOLUENE | 1.3E+05 | 1.0E+06 | 1.3E+05 | 1.6E-02 | 1.4E-05a | 1.6E-02 | 0.0E+00 |
| 1,1,1-TRICHLOROETHANE | 3.8E+04 | 1.0E+08 | 3.8E+04 | 1.1E-05 | 5.9E-09 | 1.1E-05 | 1.1E-10 |
| TRICHLOROETHYLENE | 1.1E+02 | 0.0E+00 | 1.1E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.4E-07 |
| VAPONA | 4.0E+00 | 0.0E+00 | 4.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.1E-11 |
| M-XYLENE | 8.3E+05 | 4.2E+07 | 8.2E+05 | 6.0E-06 | 1.2E-07 | 6.1E-06 | 1.0E-10 |
| O,P-XYLENE | 8.3E+05 | 4.3E+07 | 8.2E+05 | 1.2E-05 | 2.4E-07 | 1.2E-05 | 1.0E-09 |
| ARSENIC | 2.0E+00 | 0.0E+00 | 2.0E+00 | 2.4E+01* | 0.0E+00 | 2.4E+01* | 0.0E+00 |
| COPPER | 3.6E+04 | 0.0E+00 | 3.6E+04 | 6.4E-02 | 0.0E+00 | 6.4E-02 | 0.0E+00 |
| MERCURY | 2.9E+02 | 0.0E+00 | 2.9E+02 | 1.2E-03 | 0.0E+00 | 1.2E-03 | 0.0E+00 |
| ZINC | 2.0E+05 | 0.0E+00 | 2.0E+05 | 1.6E-03 | 0.0E+00 | 1.6E-03 | 0.0E+00 |

TABLE 4-4
RME EXPOSURE EVALUATIONS FOR CASUAL VISITORS

| CONTAMINANT | DIRECT PPLV (mg/kg) | INDIRECT PPLV (mg/kg) | CUMULATIVE PPLV (mg/kg) | DIRECT EI | INDIRECT EI | CUMULATIVE EI | VEI OPN |
|----------------------------------|---------------------------|-----------------------------|-------------------------------|--------------|----------------|------------------|------------|
| ALDRIN | 7.0E-02 | 1.0E+06 | 7.0E-02 | 5.7E+04* | 7.6E-03a | 5.7E+04* | 0.0E+00 |
| ATRAZINE | 2.1E+03 | 0.0E+00 | 2.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.2E-14 |
| BENZENE | 4.0E+01 | 6.6E+04 | 4.0E+01 | 7.5E-02 | 4.6E-05 | 7.5E-02 | 9.4E-07 |
| BENZOTHAZOLE | 2.0E+03 | 0.0E+00 | 2.0E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.7E-09 |
| BICYCLOHEPTADIENE | 1.6E+04 | 1.8E+07 | 1.6E+04 | 1.9E-03 | 1.6E-06 | 1.9E-03 | 6.2E-09 |
| CHLORDANE | 9.1E-01 | 0.0E+00 | 9.1E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.2E-07 |
| CHLOROACETIC ACID | 8.4E+02 | 0.0E+00 | 8.4E+02 | 9.4E+00* | 0.0E+00 | 9.4E+00* | 0.0E+00 |
| CHLOROBENZENE | 8.4E+03 | 7.2E+06 | 8.4E+03 | 6.0E-04 | 6.9E-07 | 6.0E-04 | 2.7E-09 |
| CHLOROFORM | 1.9E+02 | 7.7E+04 | 1.9E+02 | 3.7E-01 | 9.1E-04 | 3.7E-01 | 7.1E-08 |
| CHLOROPHENYLMETHYL SULFIDE | 8.3E+03 | 1.0E+06 | 8.3E+03 | 8.4E-02 | 2.5E-05a | 8.4E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFONE | 8.3E+03 | 1.0E+06 | 8.3E+03 | 3.6E-02 | 1.3E-05a | 3.6E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFOXIDE | 8.3E+03 | 1.5E+07 | 8.3E+03 | 8.4E-03 | 4.7E-06 | 8.4E-03 | 1.6E-10 |
| PPDE | 3.4E+00 | 0.0E+00 | 3.4E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.7E-09 |
| PPDT | 3.4E+00 | 0.0E+00 | 3.4E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.1E-08 |
| DIBROMOCHLOROPROPANE | 8.4E-01 | 8.1E+02 | 8.4E-01 | 2.4E+01* | 2.5E-02 | 2.4E+01* | 2.5E-08 |
| 1,2-DICHLOROETHANE | 1.3E+01 | 4.8E+04 | 1.3E+01 | 7.7E-02 | 2.1E-05 | 7.7E-02 | 2.6E-06 |
| DICYCLOPENTADIENE | 1.1E+04 | 1.6E+04 | 6.4E+03 | 3.7E-01 | 2.5E-01 | 6.2E-01 | 0.0E+00 |
| DIELDRIN | 7.3E-02 | 1.0E+06 | 7.3E-02 | 2.7E+04* | 9.3E-03a | 2.7E+04* | 0.0E+00 |
| DIISOPROPYLMETHYL PHOSPHONATE | 3.4E+04 | 4.6E+07 | 3.4E+04 | 8.9E-05 | 6.5E-08 | 8.9E-05 | 4.4E-09 |
| DIMETHYLDISULFIDE | 3.4E+03 | 1.2E+07 | 3.4E+03 | 2.1E-02 | 6.0E-06 | 2.1E-02 | 2.0E-09 |
| DIMETHYLMETHYL PHOSPHONATE | 7.6E+03 | 0.0E+00 | 7.6E+03 | 9.3E-03 | 0.0E+00 | 9.3E-03 | 0.0E+00 |
| DITHIANE | 4.2E+03 | 0.0E+00 | 4.2E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| ENDRIN | 1.3E+02 | 1.0E+06 | 1.3E+02 | 7.1E+00* | 4.6E-06a | 7.1E+00* | 0.0E+00 |
| ETHYLBENZENE | 4.2E+04 | 1.4E+08 | 4.2E+04 | 1.9E-04 | 5.6E-08 | 1.9E-04 | 1.8E-10 |
| HEXACHLOROCYCLOPENTADIENE | 2.6E+03 | 0.0E+00 | 2.6E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-06 |
| ISODRIN | 2.9E+01 | 1.0E+06 | 2.9E+01 | 1.0E+02* | 7.3E-05a | 1.0E+02* | 0.0E+00 |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.3E+05 | 0.0E+00 | 1.3E+05 | 3.6E-02 | 0.0E+00 | 3.6E-02 | 0.0E+00 |
| MALATHION | 8.4E+03 | 0.0E+00 | 8.4E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.7E-14 |
| METHYLISOBUTYL KETONE | 2.1E+04 | 4.1E+06 | 2.1E+04 | 1.9E-05 | 2.4E-07 | 1.9E-05 | 5.2E-11 |
| METHYLENE CHLORIDE | 1.5E+02 | 8.3E+05 | 1.5E+02 | 0.0E+00 | 3.6E-06 | 3.6E-06 | 0.0E+00 |
| 1,4-OXATHIANE | 1.3E+04 | 0.0E+00 | 1.3E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SUPONA | 6.3E+01 | 0.0E+00 | 6.3E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.6E-14 |
| 1,1,2,2-TETRACHL | 5.9E+00 | 8.8E+04 | 5.9E+00 | 5.1E+00* | 3.4E-04 | 5.1E+00* | 0.0E+00 |
| TETRACHLOROETHYLENE | 2.4E+01 | 3.5E+05 | 2.4E+01 | 1.7E+00* | 1.2E-04 | 1.7E+00* | 2.9E-08 |
| THIODIGLYCOL | 1.7E+04 | 0.0E+00 | 1.7E+04 | 3.4E-02 | 0.0E+00 | 3.4E-02 | 0.0E+00 |
| TOLUENE | 1.3E+05 | 1.0E+06 | 1.3E+05 | 1.6E-02 | 1.4E-05a | 1.6E-02 | 0.0E+00 |
| 1,1,1-TRICHLOROETHANE | 3.8E+04 | 1.0E+08 | 3.8E+04 | 1.1E-05 | 5.9E-09 | 1.1E-05 | 1.1E-10 |
| TRICHLOROETHYLENE | 1.1E+02 | 0.0E+00 | 1.1E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.4E-07 |
| VAPONA | 4.0E+00 | 0.0E+00 | 4.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.1E-11 |
| M-XYLENE | 8.3E+05 | 4.2E+07 | 8.2E+05 | 6.0E-06 | 1.2E-07 | 6.1E-06 | 1.0E-10 |
| O,P-XYLENE | 8.3E+05 | 4.3E+07 | 8.2E+05 | 1.2E-05 | 2.4E-07 | 1.2E-05 | 1.0E-09 |
| ARSENIC | 2.0E+00 | 0.0E+00 | 2.0E+00 | 2.4E+01* | 0.0E+00 | 2.4E+01* | 0.0E+00 |
| COPPER | 3.6E+04 | 0.0E+00 | 3.6E+04 | 6.4E-02 | 0.0E+00 | 6.4E-02 | 0.0E+00 |
| MERCURY | 2.9E+02 | 0.0E+00 | 2.9E+02 | 1.2E-03 | 0.0E+00 | 1.2E-03 | 0.0E+00 |
| ZINC | 2.0E+05 | 0.0E+00 | 2.0E+05 | 1.6E-03 | 0.0E+00 | 1.6E-03 | 0.0E+00 |

TABLE 4-5
RME EXPOSURE EVALUATIONS FOR RECREATIONAL VISITORS

| CONTAMINANT | DIRECT PPLV (mg/kg) | INDIRECT PPLV (mg/kg) | CUMULATIVE PPLV (mg/kg) | DIRECT EI | INDIRECT EI | CUMULATIVE EI | VEI OPN |
|----------------------------------|---------------------------|-----------------------------|-------------------------------|--------------|----------------|------------------|------------|
| ALDRIN | 3.0E-02 | 1.0E+06 | 3.0E-02 | 1.3E+05* | 1.8E-02a | 1.3E+05* | 0.0E+00 |
| ATRAZINE | 2.5E+03 | 0.0E+00 | 2.5E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.2E-14 |
| BENZENE | 1.7E+01 | 6.6E+04 | 1.7E+01 | 1.7E-01 | 4.6E-05 | 1.7E-01 | 2.2E-06 |
| BENZOTHIADIAZOLE | 2.4E+03 | 0.0E+00 | 2.4E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.7E-09 |
| BICYCLOHEPTADIENE | 2.0E+04 | 4.3E+07 | 1.9E+04 | 1.5E-03 | 7.0E-07 | 1.5E-03 | 6.2E-09 |
| CHLORDANE | 3.9E-01 | 0.0E+00 | 3.9E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.7E-07 |
| CHLOROACETIC ACID | 1.0E+03 | 0.0E+00 | 1.0E+03 | 7.8E+00* | 0.0E+00 | 7.8E+00* | 0.0E+00 |
| CHLOROBENZENE | 1.0E+04 | 1.7E+07 | 1.0E+04 | 4.9E-04 | 3.0E-07 | 4.9E-04 | 2.7E-09 |
| CHLOROFORM | 8.1E+01 | 7.7E+04 | 8.1E+01 | 8.6E-01 | 9.1E-04 | 8.6E-01 | 1.7E-07 |
| CHLOROPHENYLMETHYL SULFIDE | 1.0E+04 | 1.0E+06 | 1.0E+04 | 7.0E-02 | 1.1E-05a | 7.0E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFONE | 1.0E+04 | 1.0E+06 | 1.0E+04 | 3.0E-02 | 1.3E-05a | 3.0E-02 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFOXIDE | 1.0E+04 | 1.5E+07 | 1.0E+04 | 7.0E-03 | 4.7E-06 | 7.0E-03 | 1.6E-10 |
| PPDE | 1.5E+00 | 0.0E+00 | 1.5E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.3E-08 |
| PPDT | 1.5E+00 | 0.0E+00 | 1.5E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 9.6E-08 |
| DIBROMOCHLOROPROPANE | 3.6E-01 | 6.6E+02 | 3.6E-01 | 5.6E+01* | 3.0E-02 | 5.6E+01* | 5.8E-08 |
| 1,2-DICHLOROETHANE | 5.6E+00 | 4.8E+04 | 5.6E+00 | 1.8E-01 | 2.1E-05 | 1.8E-01 | 6.1E-06 |
| DICYCLOPENTADIENE | 1.1E+04 | 3.7E+04 | 8.4E+03 | 3.7E-01 | 1.1E-01 | 4.8E-01 | 0.0E+00 |
| DIELDRIN | 3.1E-02 | 1.0E+06 | 3.1E-02 | 6.4E+04* | 2.2E-02a | 6.4E+04* | 0.0E+00 |
| DIISOPROPYLMETHYL PHOSPHONATE | 4.1E+04 | 1.1E+08 | 4.1E+04 | 7.4E-05 | 2.8E-08 | 7.4E-05 | 4.4E-09 |
| DIMETHYLDISULFIDE | 4.1E+03 | 2.7E+07 | 4.1E+03 | 1.7E-02 | 2.6E-06 | 1.7E-02 | 2.0E-09 |
| DIMETHYLMETHYL PHOSPHONATE | 9.1E+03 | 0.0E+00 | 9.1E+03 | 7.7E-03 | 0.0E+00 | 7.7E-03 | 0.0E+00 |
| DITHIANE | 5.1E+03 | 0.0E+00 | 5.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| ENDRIN | 1.5E+02 | 1.0E+06 | 1.5E+02 | 5.9E+00* | 4.6E-06a | 5.9E+00* | 0.0E+00 |
| ETHYLBENZENE | 5.1E+04 | 3.4E+08 | 5.1E+04 | 1.6E-04 | 2.4E-08 | 1.6E-04 | 1.8E-10 |
| HEXACHLOROCYCLOPENTADIENE | 2.8E+03 | 0.0E+00 | 2.8E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.0E-06 |
| ISODRIN | 3.5E+01 | 1.0E+06 | 3.5E+01 | 8.5E+01* | 7.3E-05a | 8.5E+01* | 0.0E+00 |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.5E+05 | 0.0E+00 | 1.5E+05 | 3.0E-02 | 0.0E+00 | 3.0E-02 | 0.0E+00 |
| MALATHION | 1.0E+04 | 0.0E+00 | 1.0E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.7E-14 |
| METHYLISOBUTYL KETONE | 2.5E+04 | 4.1E+06 | 2.5E+04 | 1.6E-05 | 2.4E-07 | 1.6E-05 | 5.2E-11 |
| METHYLENE CHLORIDE | 6.6E+01 | 8.3E+05 | 6.6E+01 | 0.0E+00 | 3.6E-06 | 3.6E-06 | 0.0E+00 |
| 1,4-OXATHIANE | 1.5E+04 | 0.0E+00 | 1.5E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SUPONA | 7.6E+01 | 0.0E+00 | 7.6E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.6E-14 |
| 1,1,2,2-TETRACHLOROETHANE | 2.5E+00 | 8.8E+04 | 2.5E+00 | 1.2E+01* | 3.4E-04 | 1.2E+01* | 0.0E+00 |
| TETRACHLOROETHYLENE | 1.0E+01 | 3.5E+05 | 1.0E+01 | 3.9E+00* | 1.2E-04 | 3.9E+00* | 6.9E-08 |
| THIODIGLYCOL | 2.0E+04 | 0.0E+00 | 2.0E+04 | 2.8E-02 | 0.0E+00 | 2.8E-02 | 0.0E+00 |
| TOLUENE | 1.5E+05 | 1.0E+06 | 1.5E+05 | 1.3E-02 | 6.0E-06a | 1.3E-02 | 0.0E+00 |
| 1,1,1-TRICHLOROETHANE | 4.6E+04 | 2.4E+08 | 4.6E+04 | 8.8E-06 | 2.5E-09 | 8.8E-06 | 1.1E-10 |
| TRICHLOROETHYLENE | 4.6E+01 | 0.0E+00 | 4.6E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 5.5E-07 |
| VAPONA | 1.7E+00 | 0.0E+00 | 1.7E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.2E-10 |
| M-XYLENE | 1.0E+06 | 9.9E+07 | 9.9E+05 | 5.0E-06 | 5.1E-08 | 5.1E-06 | 1.0E-10 |
| O,P-XYLENE | 1.0E+06 | 9.9E+07 | 9.9E+05 | 1.0E-05 | 1.0E-07 | 1.0E-05 | 1.0E-09 |
| ARSENIC | 8.4E-01 | 0.0E+00 | 8.4E-01 | 5.7E+01* | 0.0E+00 | 5.7E+01* | 0.0E+00 |
| COPPER | 4.8E+04 | 0.0E+00 | 4.8E+04 | 4.8E-02 | 0.0E+00 | 4.8E-02 | 0.0E+00 |
| MERCURY | 3.8E+02 | 0.0E+00 | 3.8E+02 | 8.9E-04 | 0.0E+00 | 8.9E-04 | 0.0E+00 |
| ZINC | 2.6E+05 | 0.0E+00 | 2.6E+05 | 1.2E-03 | 0.0E+00 | 1.2E-03 | 0.0E+00 |

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TABLE 4-6
RME EXPOSURE EVALUATIONS FOR COMMERCIAL WORKERS

| CONTAMINANT | DIRECT PPLV (mg/kg) | INDIRECT PPLV (mg/kg) | CUMULATIVE PPLV (mg/kg) | DIRECT EI | INDIRECT EI | CUMULATIVE EI | VEI ENC |
|----------------------------------|---------------------------|-----------------------------|-------------------------------|--------------|----------------|------------------|------------|
| ALDRIN | 9.8E-02 | 3.5E+00 | 9.5E-02 | 4.1E+04* | 1.1E+03* | 4.2E+04* | 0.0E+00 |
| ATRAZINE | 3.5E+03 | 0.0E+00 | 3.5E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.1E-09 |
| BENZENE | 5.6E+01 | 9.4E-01 | 9.3E-01 | 5.3E-02 | 3.2E+00* | 3.2E+00* | 1.8E-01 |
| BENZOTHAZOLE | 3.3E+03 | 0.0E+00 | 3.3E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.1E-03 |
| BICYCLOHEPTADIENE | 2.7E+04 | 1.0E+02 | 1.8E+02 | 1.1E-03 | 1.7E-01 | 1.7E-01 | 1.2E-03 |
| CHLORDANE | 1.3E+00 | 0.0E+00 | 1.3E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.2E-02 |
| CHLOROACETIC ACID | 1.4E+03 | 0.0E+00 | 1.4E+03 | 5.6E+00* | 0.0E+00 | 5.6E+00* | 0.0E+00 |
| CHLOROBENZENE | 1.4E+04 | 1.1E+03 | 1.0E+03 | 3.5E-04 | 4.5E-03 | 4.8E-03 | 5.1E-04 |
| CHLOROFORM | 2.6E+02 | 6.2E-01 | 6.2E-01 | 2.6E-01 | 1.1E+02* | 1.1E+02* | 1.3E-02 |
| CHLOROPHENYLMETHYL SULFIDE | 1.4E+04 | 4.4E+03 | 3.4E+03 | 5.0E-02 | 1.6E-01 | 2.1E-01 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFONE | 1.4E+04 | 1.5E+02 | 1.5E+02 | 2.1E-02 | 2.0E+00* | 2.0E+00* | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFOXIDE | 1.4E+04 | 2.3E+02 | 2.3E+02 | 5.0E-03 | 3.0E-01 | 3.0E-01 | 3.0E-05 |
| PPDE | 4.8E+00 | 0.0E+00 | 4.8E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.1E-03 |
| PPDT | 4.8E+00 | 0.0E+00 | 4.8E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 7.7E-03 |
| DIBROMOCHLOROPROPANE | 1.2E+00 | 6.0E-03 | 6.0E-03 | 1.7E+01* | 3.3E+03* | 3.3E+03* | 4.6E-03 |
| 1,2-DICHLOROETHANE | 1.8E+01 | 3.2E-01 | 3.2E-01 | 5.5E-02 | 3.1E+00* | 3.2E+00* | 4.9E-01 |
| DICYCLOPENTADIENE | 1.6E+04 | 1.3E-01 | 1.3E-01 | 2.5E-01 | 3.1E+04* | 3.1E+04* | 0.0E+00 |
| DIELDRIN | 1.0E-01 | 1.4E+00 | 9.6E-02 | 1.9E+04* | 1.4E+03* | 2.1E+04* | 0.0E+00 |
| DIISOPROPYLMETHYL PHOSPHONATE | 5.7E+04 | 5.0E+02 | 5.0E+02 | 5.3E-05 | 6.0E-03 | 6.0E-03 | 8.3E-04 |
| DIMETHYLDISULFIDE | 5.7E+03 | 1.8E+03 | 1.4E+03 | 1.2E-02 | 3.9E-02 | 5.1E-02 | 3.7E-04 |
| DIMETHYLMETHYL PHOSPHONATE | 1.3E+04 | 0.0E+00 | 1.3E+04 | 5.5E-03 | 0.0E+00 | 5.5E-03 | 0.0E+00 |
| DITHIANE | 7.1E+03 | 0.0E+00 | 7.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| ENDRIN | 2.1E+02 | 1.3E+03 | 1.8E+02 | 4.2E+00* | 6.9E-01 | 4.9E+00* | 0.0E+00 |
| ETHYLBENZENE | 7.1E+04 | 2.2E+04 | 1.7E+04 | 1.1E-04 | 3.6E-04 | 4.7E-04 | 3.3E-05 |
| HEXACHLOROCYCLOPENTADIENE | 4.0E+03 | 0.0E+00 | 4.0E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.9E-01 |
| ISODRIN | 5.0E+01 | 2.8E+02 | 4.2E+01 | 6.0E+01* | 1.1E+01* | 7.1E+01* | 0.0E+00 |
| ISOPROPYL METHYL PHOSPHONIC ACID | 2.1E+05 | 0.0E+00 | 2.1E+05 | 2.2E-02 | 0.0E+00 | 2.2E-02 | 0.0E+00 |
| MALATHION | 1.4E+04 | 0.0E+00 | 1.4E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.1E-09 |
| METHYLISOBUTYL KETONE | 3.5E+04 | 2.2E+01 | 2.2E+01 | 1.1E-05 | 4.5E-02 | 4.5E-02 | 9.8E-06 |
| METHYLENE CHLORIDE | 2.2E+02 | 5.5E+00 | 5.4E+00 | 0.0E+00 | 5.4E-01 | 5.4E-01 | 0.0E+00 |
| 1,4-OXATHIANE | 2.1E+04 | 0.0E+00 | 2.1E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SUPONA | 1.1E+02 | 0.0E+00 | 1.1E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.7E-09 |
| 1,1,2,2-TETRACHLOROETHANE | 8.3E+00 | 2.3E+01 | 6.1E+00 | 3.6E+00* | 1.3E+00* | 4.9E+00* | 0.0E+00 |
| TETRACHLOROETHYLENE | 3.3E+01 | 3.4E+00 | 3.1E+00 | 1.2E+00* | 1.2E+01* | 1.3E+01* | 5.5E-03 |
| THIODIGLYCOL | 2.8E+04 | 0.0E+00 | 2.8E+04 | 2.0E-02 | 0.0E+00 | 2.0E-02 | 0.0E+00 |
| TOLUENE | 2.1E+05 | 1.1E+03 | 1.1E+03 | 9.4E-03 | 1.7E+00* | 1.8E+00* | 0.0E+00 |
| 1,1,1-TRICHLOROETHANE | 6.4E+04 | 6.8E+02 | 6.7E+02 | 6.3E-06 | 8.9E-04 | 8.9E-04 | 2.1E-05 |
| TRICHLOROETHYLENE | 1.5E+02 | 0.0E+00 | 1.5E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.4E-02 |
| VAPONA | 5.6E+00 | 0.0E+00 | 5.6E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 9.5E-06 |
| M-XYLENE | 1.4E+06 | 4.2E+02 | 4.2E+02 | 3.6E-06 | 1.2E-02 | 1.2E-02 | 2.0E-05 |
| O,P-XYLENE | 1.4E+06 | 4.2E+02 | 4.2E+02 | 7.1E-06 | 2.4E-02 | 2.4E-02 | 1.9E-04 |
| ARSENIC | 1.2E+00 | 0.0E+00 | 1.2E+00 | 3.9E+01* | 0.0E+00 | 3.9E+01* | 0.0E+00 |
| COPPER | 3.0E+04 | 0.0E+00 | 3.0E+04 | 7.7E-02 | 0.0E+00 | 7.7E-02 | 0.0E+00 |
| MERCURY | 2.4E+02 | 0.0E+00 | 2.4E+02 | 1.4E-03 | 0.0E+00 | 1.4E-03 | 0.0E+00 |
| ZINC | 1.6E+05 | 0.0E+00 | 1.6E+05 | 2.0E-03 | 0.0E+00 | 2.0E-03 | 0.0E+00 |

TABLE 4-7
RME EXPOSURE EVALUATIONS FOR INDUSTRIAL WORKERS

| CONTAMINANT | DIRECT | INDIRECT | | CUMULATIVE | DIRECT | INDIRECT | CUMULATIVE | VEI | |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|----------|----------|------------|---------|---------|
| | PPLV (mg/kg) | OSVI (mg/kg) | ESVI (mg/kg) | PPLV (mg/kg) | EI | EI | EI | OPN | ENC |
| ALDRIN | 1.9E-02 | 1.3E+05 | 3.5E+00 | 1.9E-02 | 2.1E+05* | 1.1E+03* | 2.1E+05* | 0.0E+00 | 0.0E+00 |
| ATRAZINE | 6.9E+02 | 0.0E+00 | 0.0E+00 | 6.9E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 8.6E-14 | 4.1E-09 |
| BENZENE | 1.1E+01 | 1.7E+04 | 9.4E-01 | 8.7E-01 | 2.8E-01 | 3.2E+00* | 3.5E+00* | 3.7E-06 | 1.8E-01 |
| BENZOTHAZOLE | 6.5E+02 | 0.0E+00 | 0.0E+00 | 6.5E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.2E-08 | 1.1E-03 |
| BICYCLOHEPTADIENE | 5.3E+03 | 4.7E+06 | 1.8E+02 | 1.7E+02 | 5.7E-03 | 1.7E-01 | 1.7E-01 | 2.5E-08 | 1.2E-03 |
| CHLORDANE | 2.5E-01 | 0.0E+00 | 0.0E+00 | 2.5E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.6E-07 | 2.2E-02 |
| CHLOROACETIC ACID | 2.7E+02 | 0.0E+00 | 0.0E+00 | 2.7E+02 | 2.9E+01* | 0.0E+00 | 2.9E+01* | 0.0E+00 | 0.0E+00 |
| CHLOROBENZENE | 2.7E+03 | 1.8E+06 | 1.1E+03 | 7.9E+02 | 1.8E-03 | 4.5E-03 | 6.3E-03 | 1.1E-08 | 5.1E-04 |
| CHLOROFORM | 5.1E+01 | 1.9E+04 | 6.2E-01 | 6.2E-01 | 1.4E+00* | 1.1E+02* | 1.1E+02* | 2.8E-07 | 1.3E-02 |
| CHLOROPHENYLMETHYL SULFIDE | 2.7E+03 | 7.2E+06 | 4.4E+03 | 1.7E+03 | 2.6E-01 | 1.6E-01 | 4.2E-01 | 0.0E+00 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFONE | 2.7E+03 | 5.7E+06 | 1.5E+02 | 1.4E+02 | 1.1E-01 | 2.0E+00* | 2.1E+00* | 0.0E+00 | 0.0E+00 |
| CHLOROPHENYLMETHYL SULFOXIDE | 2.7E+03 | 3.8E+06 | 2.3E+02 | 2.2E+02 | 2.6E-02 | 3.0E-01 | 3.2E-01 | 6.2E-10 | 3.0E-05 |
| PPDE | 9.3E-01 | 0.0E+00 | 0.0E+00 | 9.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.3E-08 | 1.1E-03 |
| PPDT | 9.3E-01 | 0.0E+00 | 0.0E+00 | 9.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.6E-07 | 7.7E-03 |
| DIBROMOCHLOROPROPANE | 2.3E-01 | 2.1E+02 | 6.0E-03 | 5.9E-03 | 8.8E+01* | 3.3E+03* | 3.4E+03* | 9.8E-08 | 4.6E-03 |
| 1,2-DICHLOROETHANE | 3.5E+00 | 1.2E+04 | 3.2E-01 | 2.9E-01 | 2.8E-01 | 3.1E+00* | 3.4E+00* | 1.0E-05 | 4.9E-01 |
| DICYCLOPENTADIENE | 2.7E+03 | 4.0E+03 | 1.3E-01 | 1.3E-01 | 1.5E+00* | 3.1E+04* | 3.1E+04* | 0.0E+00 | 0.0E+00 |
| DIELDRIN | 2.0E-02 | 5.5E+04 | 1.4E+00 | 2.0E-02 | 1.0E+05* | 1.4E+03* | 1.0E+05* | 0.0E+00 | 0.0E+00 |
| DIISOPROPYLMETHYL PHOSPHONATE | 1.1E+04 | 1.2E+07 | 5.0E+02 | 4.8E+02 | 2.7E-04 | 6.0E-03 | 6.2E-03 | 1.8E-08 | 8.3E-04 |
| DIMETHYLDISULFIDE | 1.1E+03 | 3.0E+06 | 1.8E+03 | 6.9E+02 | 6.3E-02 | 3.9E-02 | 1.0E-01 | 7.9E-09 | 3.7E-04 |
| DIMETHYLMETHYL PHOSPHONATE | 2.5E+03 | 0.0E+00 | 0.0E+00 | 2.5E+03 | 2.8E-02 | 0.0E+00 | 2.8E-02 | 0.0E+00 | 0.0E+00 |
| DITHIANE | 1.4E+03 | 0.0E+00 | 0.0E+00 | 1.4E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| ENDRIN | 4.1E+01 | 5.0E+07 | 1.3E+03 | 4.0E+01 | 2.2E+01* | 6.9E-01 | 2.3E+01* | 0.0E+00 | 0.0E+00 |
| ETHYLBENZENE | 1.4E+04 | 3.6E+07 | 2.2E+04 | 8.5E+03 | 5.8E-04 | 3.6E-04 | 9.4E-04 | 6.9E-10 | 3.3E-05 |
| HEXACHLOROCYCLOPENTADIENE | 7.0E+02 | 0.0E+00 | 0.0E+00 | 7.0E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 4.0E-06 | 1.9E-01 |
| ISODRIN | 9.6E+00 | 1.0E+07 | 2.8E+02 | 9.3E+00 | 3.1E+02* | 1.1E+01* | 3.2E+02* | 0.0E+00 | 0.0E+00 |
| ISOPROPYL METHYL PHOSPHONIC ACID | 4.1E+04 | 0.0E+00 | 0.0E+00 | 4.1E+04 | 1.1E-01 | 0.0E+00 | 1.1E-01 | 0.0E+00 | 0.0E+00 |
| MALATHION | 2.7E+03 | 0.0E+00 | 0.0E+00 | 2.7E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 6.6E-14 | 3.1E-09 |
| METHYL ISOBUTYL KETONE | 6.9E+03 | 1.0E+06 | 2.2E+01 | 2.2E+01 | 5.8E-05 | 4.5E-02 | 4.5E-02 | 2.1E-10 | 9.8E-06 |
| METHYLENE CHLORIDE | 4.2E+01 | 2.1E+05 | 5.5E+00 | 4.9E+00 | 0.0E+00 | 5.4E-01 | 5.4E-01 | 0.0E+00 | 0.0E+00 |
| 1,4-OXATHIANE | 4.1E+03 | 0.0E+00 | 0.0E+00 | 4.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SUPONA | 2.1E+01 | 0.0E+00 | 0.0E+00 | 2.1E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.4E-13 | 6.7E-09 |
| 1,1,2,2-TETRACHLOROETHANE | 1.6E+00 | 2.2E+04 | 2.3E+01 | 1.5E+00 | 1.9E+01* | 1.3E+00* | 2.0E+01* | 0.0E+00 | 0.0E+00 |
| TETRACHLOROETHYLENE | 6.4E+00 | 8.8E+04 | 3.4E+00 | 2.2E+00 | 6.2E+00* | 1.2E+01* | 1.8E+01* | 1.2E-07 | 5.5E-03 |
| THIODIGLYCOL | 5.5E+03 | 0.0E+00 | 0.0E+00 | 5.5E+03 | 1.0E-01 | 0.0E+00 | 1.0E-01 | 0.0E+00 | 0.0E+00 |
| TOLUENE | 4.1E+04 | 3.6E+07 | 1.1E+03 | 1.1E+03 | 4.8E-02 | 1.7E+00* | 1.8E+00* | 0.0E+00 | 0.0E+00 |
| 1,1,1-TRICHLOROETHANE | 1.2E+04 | 2.6E+07 | 6.8E+02 | 6.4E+02 | 3.2E-05 | 8.9E-04 | 9.2E-04 | 4.4E-10 | 2.1E-05 |
| TRICHLOROETHYLENE | 2.9E+01 | 0.0E+00 | 0.0E+00 | 2.9E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 9.3E-07 | 4.4E-02 |
| VAPONA | 1.1E+00 | 0.0E+00 | 0.0E+00 | 1.1E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.0E-10 | 9.5E-06 |
| M-XYLENE | 2.7E+05 | 1.1E+07 | 4.2E+02 | 4.2E+02 | 1.9E-05 | 1.2E-02 | 1.2E-02 | 4.2E-10 | 2.0E-05 |
| O,P-XYLENE | 2.7E+05 | 1.1E+07 | 4.2E+02 | 4.2E+02 | 3.7E-05 | 2.4E-02 | 2.4E-02 | 4.1E-09 | 1.9E-04 |
| ARSENIC | 8.1E-01 | 0.0E+00 | 0.0E+00 | 8.1E-01 | 5.9E+01* | 0.0E+00 | 5.9E+01* | 0.0E+00 | 0.0E+00 |
| COPPER | 2.0E+04 | 0.0E+00 | 0.0E+00 | 2.0E+04 | 1.1E-01 | 0.0E+00 | 1.1E-01 | 0.0E+00 | 0.0E+00 |
| MERCURY | 1.6E+02 | 0.0E+00 | 0.0E+00 | 1.6E+02 | 2.1E-03 | 0.0E+00 | 2.1E-03 | 0.0E+00 | 0.0E+00 |
| ZINC | 1.0E+05 | 0.0E+00 | 0.0E+00 | 1.0E+05 | 3.1E-03 | 0.0E+00 | 3.1E-03 | 0.0E+00 | 0.0E+00 |

TABLE 4-8
SUMMARY OF CONTAMINANTS OF CONCERN, CRITICAL PATHWAY,
AND AFFECTED POPULATION

| Contaminant of Concern | Critical Pathway | Affected Population |
|------------------------------|------------------------------|---------------------|
| 1,1-Dichloroethylene | Indirect | COMW, INDW |
| 1,1,2,2-Tetrachloroethane | Direct, Indirect, Cumulative | ALL |
| 1,2-Dichloroethane | Direct, Indirect | ALL |
| Aldrin | Direct, Indirect | ALL |
| Benzene | Direct, Indirect | ALL |
| Benzothiazole | Direct | COMW, INDW |
| Bicycloheptadiene | Direct, Indirect | COMW, INDW |
| Carbon tetrachloride | Direct, Indirect | ALL |
| Chlordane | Direct, Indirect, Cumulative | ALL |
| Chloroacetic acid | Direct | ALL |
| Chlorobenzene | Indirect | INDW |
| Chloroform | Direct, Indirect, Cumulative | ALL |
| Chlorophenylmethyl sulfide | Direct, Indirect | INDW, COMW |
| Chlorophenylmethyl sulfone | Indirect | INDW, COMW |
| Chlorophenylmethyl sulfoxide | Indirect | INDW, COMW |
| Dibromochloropropane | Direct, Indirect, Cumulative | ALL |
| Dicyclopentadiene | Direct, Indirect, Cumulative | ALL |
| Dieldrin | Direct, Indirect | ALL |
| Dimethyldisulfide | Indirect | COMW, INDW |
| Endrin | Direct | ALL |
| Fluoroacetic acid | Direct | ALL |
| Hexachlorocyclopentadiene | Direct, Indirect | ALL |
| Isodrin | Direct, Indirect, Cumulative | ALL |
| Methylene chloride | Direct, Indirect | ALL |
| Methylisobutyl ketone | Indirect | COMW |
| PPDDE | Direct, Indirect, Cumulative | ALL |
| PPDDT | Direct, Indirect, Cumulative | ALL |
| Supona | Direct | INDW |
| Tetrachloroethylene | Direct, Indirect | ALL |
| Toluene | Indirect | INDW, COMW |
| Trichloroethylene | Direct, Indirect | RECV, COMW, INDW |
| Arsenic | Direct | ALL |
| Cadmium | Direct | ALL |
| Chromium | Direct | ALL |
| Copper | Direct | INDW |
| Lead | Direct | ALL |
| Mercury | Direct | ALL |
| Zinc | Direct | INDW |

4.2 CONTAMINANTS OF CONCERN

Of the 60 target RMA contaminants for which PPLVs were computed (see Volume V), only 8 were not detected in the RI Phase I and II sampling program. Of the 52 remaining contaminants, 38 were identified as contaminants of concern. Thirty-seven of the 38 chemicals were identified as COCs from the site-by-site exposure assessments for the industrial worker and one chemical, methylisobutyl ketone (MIBK) was identified as a COC for the commercial worker only. MIBK is a COC for the commercial worker, but not the industrial worker only for Sites CSA-1a and SPSA-1g. At these sites, MIBK has a dryout time that is shorter than the exposure period for a commercial worker (10 years). The average vapor flux (FAVN) and subsequent single pathway PPLV (SPPPLV) were, therefore, calculated using the $FAVN_{Mass\ Balance}$ equation. This process indicates a lower SPPPLV for a commercial worker than for an industrial worker and results in an indirect EI exceedance at Sites CSA-1a and SPSA-1g.

These chemicals are summarized in Table 4-9 together with the study areas on which they exceeded and the total number of exceedances. No additional COCs were identified in the additivity or RME screen.

The COCs were assigned a category as follows:

- Category A consists of 20 contaminants of concern which exceed their respective PPLVs by a significant margin (i.e., $EI > 10$).
- Category B contains the nine contaminants with $10 > EI > 1.0$.
- Category C consists of nine contaminants with $1.0 > EI > 0.1$.

The COCs are summarized by priority ranking in Table 4-10.

4.3 FIRST SCREEN REMEDIAL BOUNDARY DETERMINATION FOR RMA STUDY AREAS

Of the 178 sites evaluated in the Study Area Exposure Assessments, 121 are designated as Priority 1 sites, based on the most sensitive exposed population PPLV (i.e., the industrial worker). The remaining 57 sites are designated as Priority 2 sites. Table 4-11 summarizes the Priority 1/Priority 2 site designations for each study area.

TABLE 4-9
STUDY AREA CONTAMINANTS OF CONCERN
EXPOSED POPULATION: INDUSTRIAL WORKER

| Contaminant of Concern | Study Area | Total Number of Exceedances | Number of Exceedances Based on Vapor Inhalation |
|---------------------------------|------------------------------------|--------------------------------|--|
| Aldrin | NPSA, CSA, SSA, SPSA, WSA, NCSA | 64 | 2 |
| Benzene | NPSA, CSA, ESA, SPSA, WSA, NCSA | 19 | 24 |
| Benzothiazole | CSA | 1 | 0 |
| Bicycloheptadiene | SPSA, NCSA | 2 | 2 |
| Carbon tetrachloride | CSA, SSA, SPSA, WSA | 5 | 25 |
| Chloroacetic acid | NPSA, NCSA, CSA SPSA | 5 | 0 |
| Chlordane | CSA, SSA, SPSA, NCSA | 29 | 3 |
| Chlorobenzene | NCSA | 1 | 7 |
| Chloroform | NPSA, SPSA, CSA NCSA | 10 | 24 |
| Chlorophenylmethyl sulfide | SPSA, NCSA | 2 | 0 |
| Chlorophenylmethyl sulfone | NCSA | 1 | 0 |
| Chlorophenylmethyl sulfoxide | NCSA | 1 | 0 |
| Dibromochloropropane | CSA, SSA, SPSA, WSA, NCSA | 13 | 11 |

TABLE 4-9 (Continued)
STUDY AREA CONTAMINANTS OF CONCERN
EXPOSED POPULATION: INDUSTRIAL WORKER

| Contaminant of Concern | Study Area | Total Number of Exceedances | Number of Exceedances Based on Vapor Inhalation |
|--------------------------------|--|--------------------------------|--|
| PPDDE | CSA, SSA, SPSA, NCSA | 17 | 3 |
| PPDDT | CSA, SSA, SPSA, NCSA | 19 | 6 |
| 1,1-Dichloroethylene | CSA | 1 | 20 |
| 1,2-Dichloroethane | SPSA, NCSA, CSA | 4 | 5 |
| Dicyclopentadiene | SPSA, WSA, NCSA CSA | 12 | 14 |
| Dieldrin | NPSA, CSA, SSA, ESA, WSA, NCSA, SPSA | 77 | 0 |
| Dimethyldisulfide | NCSA, CSA | 2 | 1 |
| Endrin | CSA, SPSA, NCSA | 6 | 0 |
| Fluoroacetic acid | CSA, ESA, NCSA | 17 | 0 |
| Hexachlorocyclo- pentadiene | CSA, SPSA, SSA NCSA, WSA | 11 | 2 |
| Isodrin | CSA, SSA, SPSA, NCSA, WSA | 16 | 10 |
| Methylene chloride | CSA, SSA, ESA, SPSA, WSA, NCSA | 28 | 9 |

TABLE 4-9 (Continued)
STUDY AREA CONTAMINANTS OF CONCERN
EXPOSED POPULATION: INDUSTRIAL WORKER

| Contaminant of Concern | Study Area | Total Number of Exceedances | Number of Exceedances Based on Vapor Inhalation |
|-------------------------------------|--|--------------------------------|--|
| Methylisobutyl ketone ¹¹ | SPSA, CSA | 2 | 1 |
| 1,1,2,2-Tetrachloro- ethane | CSA, SSA, SPSA, WSA, NCSA | 14 | 2 |
| Tetrachloroethylene | NPSA, CSA, NCSA, SPSA, WSA | 14 | 8 |
| 1,1,2-Tetrachloro- ethylene | SPSA | 0 | 2 |
| Toluene | NCSA | 1 | 1 |
| Trichloroethylene | ESA, WSA, NCSA, SPSA | 8 | 17 |
| Supona | SPSA | 1 | 0 |
| Arsenic | NPSA, SSA, CSA, ESA, SPSA, WSA, NCSA | 46 | - |
| Chromium | CSA, SPSA, WSA, SSA, NCSA, NPSA, ESA | 26 | - |
| Copper | CSA, WSA | 2 | - |
| Cadmium | SPSA, WSA, NCSA, CSA, ESA, NPSA | 43 | - |
| Lead | CSA, SSA, ESA, SPSA, WSA, NCSA | 16 | - |

TABLE 4-9 (Continued)
STUDY AREA CONTAMINANTS OF CONCERN
EXPOSED POPULATION: INDUSTRIAL WORKER

| Contaminant of Concern | Study Area | Total Number of Exceedances | Number of Exceedances Based on Vapor Inhalation |
|---------------------------|------------|--------------------------------|--|
| Mercury | SPSA, NCSA | 5 | - |
| Zinc | ESA | 1 | - |

38 COCs

1/ Identified as a COC for the commercial worker only.

TABLE 4-10
CATEGORY RANKING OF ARSENAL-WIDE CONTAMINANTS OF CONCERN

| Category | Weight of Evidence Classification ^{1/} |
|--|---|
| <u>Category A (EI > 10)</u> | |
| Aldrin | B2 |
| Benzene | A |
| Carbon tetrachloride | B2 |
| Chlordane | B2 |
| Chloroform | B2 |
| Dibromochloropropane | B2 |
| Dieldrin | B2 |
| PPDDT | B2 |
| Dicyclopentadiene | NC |
| Endrin | D |
| Fluoroacetic acid ^{2/3/} | NC |
| Hexachlorocyclopentadiene | D |
| Isodrin | NC |
| Methylene chloride | B2 |
| 1,1,2,2-Tetrachloroethane | C |
| Tetrachloroethylene | NC |
| Arsenic | A |
| Cadmium | B1 |
| Chromium | A |
| Mercury | D |
| <u>Category B (10 > EI > 1)</u> | |
| Benzothiazole | NC |
| Bicycloheptadiene | NC |
| Chloroacetic acid ^{3/4/} | NC |
| 1,2-Dichloroethane | B2 |
| 1,1-Dichloroethylene | C |
| PPDDE | B2 |
| Toluene | D |
| Trichloroethylene | B2 |
| Lead | B2 |
| <u>Category C (1 > EI > 0.1)</u> | |
| Chlorobenzene | C |
| Chlorophenylmethyl sulfide | NC |
| Chlorophenylmethyl sulfone | NC |
| Chlorophenylmethyl sulfoxide | NC |
| Copper | D |
| Dimethyldisulfide | NC |
| Supona | NC |
| Zinc | D |
| Methylisobutyl ketone ^{5/} | NC |

1/ Weight of evidence classifications are defined in Table 3-1, Section 3.2.1, Volume II Toxicity Assessment; NC denotes no classification available.

2/ Degradation product of Sarin

3/ Surety agent degradation products certified as of November 1986

4/ Degradation product of mustard

5/ Identified as a COC for the commercial worker only (see Section 4.2).

TABLE 4-11
PRIORITY 1/PRIORITY 2 SITES AT RMA STUDY AREAS
EXPOSED POPULATION: INDUSTRIAL WORKER

| Study Area | Prioirty 2 Candidate | Priority 1 Candidate | Total |
|---------------|-------------------------|-------------------------|-----------|
| Western | 17 | 14 | 31 |
| Southern | 4 | 13 | 17 |
| North Central | 13 | 20 | 43 |
| Central | 3 | 7 | 10 |
| Eastern | 12 | 14 | 26 |
| South Plants | 2 | 33 | 35 |
| North Plants | <u>6</u> | <u>10</u> | <u>16</u> |
| TOTAL | 57 | 121 | 178 |

The significance of the areal extent of contamination in each study area was determined by plotting the areas where the detected contaminant concentrations exceeded their applicable cumulative direct and indirect PPLVs for the industrial worker (i.e., areas of exceedance) and comparing these to the areas of known or inferred contaminants determined by the RI. These exceedance plots generated through the exposure assessment can be considered as first screen boundaries within which remedial action would most likely be investigated under the FS. The ensuing sections discuss the methodology by which the remedial boundaries were determined and the results follow.

4.3.1 Methodology and Assumptions

Borings in which an EI was computed to be greater than 0.1, based on industrial PPLVs, were plotted on an Arsenal-wide map. Areas in which concentrations exceeded direct PPLVs are designated differently than areas in which concentrations exceeded indirect PPLVs. The exceedance areas were generated consistent with the methods used in the SARs to determine the contaminated volumes. Simple geometric shapes were used to delineate areas of exceedance. Where necessary, larger scale maps from the Phase I and II RI reports were examined to better define areas and site characteristics. A set of assumptions for each type of feature was consistently applied to each study area as follows.

- Isolated exceedances located within a site boundary were assumed to extend to the nearest sample that showed no exceedance. Multiple adjacent exceedances were assumed to extend one half the distance to adjacent samples with no exceedance or to the site or study area boundary.
- The area of potential contamination corresponding to exceedances within ditch and railroad track samples was assumed to have a width equal to that of the ditch or track plus 5 ft on each side. The length of the exceeding area was assumed to extend one-half the distance to the adjacent samples with no exceedance or to the site or study area boundary.
- Isolated detections were assigned an area equal to that of a circle with a diameter of 20 ft consistent with the SAR methodology.
- Isolated or multiple exceedances occurring within a trench or pit in a site were assigned an area equal to the length and width of the trench or pit. If no documented size was available (e.g., some of the trenches in the Central Study Area (CSA) anomalies), an estimate was made from Phase I and II RI figures depicting the trench locations.
- Single nonexceeding borings surrounded by exceedances were included in the area of exceedance.

- Sewer lines were evaluated using maximum contaminant concentrations. Boring-by-boring analyses were therefore not performed, and an exceedance of the maximum was assumed to extend the entire length of the sewer line.

Consistent with the individual SARs, the exceptions to the above assumptions include:

- All exceedances in the Complex Disposal Area south of CSA-1b in the CSA were assumed to extend to adjacent samples with no exceedance or to the site boundaries, whichever was closest.
- Isolated detections in the South Plants Study Area (SPSA) were assigned an area to be equal to a circle with a 50-ft diameter consistent with the SAR methodology. In some cases, these areas were modified to account for barriers such as buildings, ditches, or roads.

Areas of exceedance were computed for each study area by calculating the areas for the individual geometric shapes depicted on the Arsenal-wide map. A total area of exceedance was computed for the Arsenal by summing the values for each study area.

4.3.2 Areal Extent of Exceedances

Areas of exceedance were plotted for each study area as discussed above and are depicted in Plate E-1, along with the areas of known or inferred contaminants determined in the RI. It can be determined through visual inspection of this map that only a portion of the areas of known contaminants may be considered significant. It should be noted, however, that these areas are only a first screen. In a few cases, the areas of exceedance can be misleading due to the methodology used and since exceedances cannot be inferred. These situations are listed below and will be considered in the FS.

- In the Central Study Area, exceedances occurring in the adjacent North Central Study Area were not accounted for, since the methodology limits exceedance areas to the study area boundary. For example, if it were not for the study area boundary between Basin A and the Complex Disposal Area North, a larger area of exceedance would be shown in Anomaly H.

Exceedance areas were compared to the estimated area of known contaminants to approximate the significance of contamination. Table 4-12 lists the areas of known contaminants, the exceedance areas, and the percent of contaminant areas which the areas of exceedance occupy for each study area. It can be seen that the area of contamination

TABLE 4-12
EXCEEDANCE AREAS FOR RMA STUDY AREAS

| Study Area | Area of Known Contaminants (ft ²) | Area of Exceedance (ft ²) | Percent of Area of Known Contaminants |
|---------------|---|---|---|
| Western | 1,800,000 | 1,600,000 | 67 |
| Southern | 5,400,000 | 2,900,000 | 54 |
| North Central | 29,000,000 | 11,000,000 | 38 |
| Central | 7,500,000 | 4,100,000 | 55 |
| Eastern | 3,600,000 | 1,000,000 | 28 |
| South Plants | 4,000,000 | 2,900,000 | 73 |
| North Plants | <u>420,000</u> | <u>96,000</u> | <u>23</u> |
| TOTAL ARSENAL | 52,000,000 | 23,000,000 | 44 |

of possible significance to human health is approximately 2.3×10^7 ft² (0.82 mile²). This area occupies about 44 percent of the area of known contaminants or 3 percent of the total area of RMA. Of the 2.3×10^7 ft², 1.5×10^6 ft², or 7.1 percent, accounts for areas in which contaminant concentrations exceeded the enclosed space vapor inhalation pathway only.

5.0 HISTORICAL PERSPECTIVE

5.1 COMPARISON WITH HISTORICAL PRIORITY 1/PRIORITY 2 SITES

The Priority 1/Priority 2 designations from the Exposure Assessment were compared with the historical recommendations presented in the Decontamination Assessment for Land and Facilities at RMA of 1984 (D'Appolonia, 1984/RIC 84034R01). This comparison was made to allow a "first cut" contrast between the "suggested" areas of proposed remediation in the earlier, less exhaustive DALF to the determinations in the current Exposure Assessment evaluations based on open space with supporting commercial/industrial use development of the Arsenal. The comparisons are presented below.

| Recommendation | Decontamination Assessment for Land and Facilities (1984) | <u>Exposure Assessment (1990)</u> Industrial Worker |
|----------------|---|--|
| Priority 1 | 96 | 122 |
| Priority 2 | <u>69</u> | <u>56</u> |
| TOTAL | 165 | 178 |

It should be noted that direct comparison of the total number of sites cannot be made since many of the site boundaries and designations have changed in the comprehensive RI. Additionally, the Decontamination Assessment for Land and Facilities report did not rely on actual sampling and analysis, but on historical information only (e.g., storage, spills, etc.) to recommend sites for Priority 1/Priority 2. Extensive field sampling and analysis programs have been provided in the RI. Based on these data, the current evaluations require the consideration of somewhat fewer sites during the course of the FS than had been previously estimated.

5.2 COMPARISON WITH HISTORICAL AREAS OF CONTAMINATION

The areas of exceedance from the Exposure Assessment were compared with the historical suggested area of contamination in the Decontamination Assessment for Land and Facilities. The total area of exceedance as discussed in Section 3.3 was calculated to be

$2.3 \times 10^7 \text{ ft}^2$. Comparing this value to the contaminated area in the Decontamination Assessment for Land and Facilities, which was estimated as $5.6 \times 10^7 \text{ ft}^2$, reveals that approximately 41 percent of this area is considered to be significant. It should be noted that this value is based on historical information only, and that the value based on analytical data from the RI was calculated in Section 4.3 to be slightly higher at 44 percent.

6.0 REFERENCES

RIC 84034R01

D'Appolonia Consulting Engineering, Inc. 1984. Decontamination Assessment for Land and Facilities at RMA. Draft Final Report prepared for U.S. Army Toxic and Hazardous Materials Agency. Aberdeen Proving Ground, MD. Battelle Delivery Order No. 0537.

RIC 88357R01

EBASCO (Ebasco Services Incorporated). 1988. Rocky Mountain Arsenal Chemical Index. Volumes I-II. May 1988. Prepared for U.S. Army Program Manager's Office for RMA Contamination Cleanup.

EPA (U.S. Environmental Protection Agency). 1990. 55 Federal Register 8666, March 8, 1990, 40CFR Part 300. National Oil and Hazardous Substances Pollution Contingency Plan.

APPENDIX A
CHEMICAL-SPECIFIC CONCENTRATION AND EXCEEDANCE DATA

WESTERN STUDY AREA

Site W-5A-1b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| BENZENE | 1.1E-02 | 1.1E-08 | | |
| CARBON TETRACHLORIDE | 2.5E-02 | 2.5E-08 | | |
| TETRACHLOROETHYLENE | 9.9E-03 | 9.9E-09 | | |
| TOTALS | 4.7E-02 | 4.7E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 4.7E-08

Site W SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|------------------------------------|--|
| CARBON TETRACHLORIDE | 6.5E-04 | | |
| TETRACHLOROETHYLENE | 6.1E-05 | | |
| TOTALS | 7.1E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 7.1E-04

Site W-SA-1d
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 7.4E-03 | 7.4E-09 | | |
| TOTALS | 7.4E-03 | 7.4E-09 | 0.0E+00 | .00% |
| RESIDUAL RISK - 7.4E-09 | | | | |

Site W-SA 1d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|------------------------------------|--|
| METHYLENE CHLORIDE | 1.4E-06 | | |
| TOTALS | 1.4E-06 | 0.0E+00 | .00% |

RESIDUAL HI = 1.4E-06

Site W-Sale
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| DIBROMOCHLOROPROPANE | 9.8E-01 | 9.8E-07 | | |
| TOTALS | 9.8E-01 | 9.8E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 9.8E-07

Site W-SA-1e
NON-ARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI - 0.0E+00

Site W-SA 1f
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.7E+01 | 1.7E-05 | 1.7E-05 | 23.09% |
| DIELDRIN | 5.7E+01 | 5.7E-05 | 5.7E-05 | 76.91% |
| METHYLENE CHLORIDE | 1.3E-04 | 1.3E-10 | | |
| TOTALS | 7.4E+01 | 7.4E-05 | 7.4E-05 | 100.00% |

RESIDUAL RISK = 1.2E-10

Site W-5A-1f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|------------------------------------|--|
| ALIRIN | 7.9E-02 | | |
| DIELDRIN | 1.7E-01 | | |
| METHYLENE CHLORIDE | 2.5E-08 | | |
| TOTALS | 2.4E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 2.4E-01

Site W-SA 19
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 2.4E-02 | 2.4E-08 | | |
| TOTALS | 2.4E-02 | 2.4E-08 | 0.0E+00 | .00% |
| RESIDUAL RISK = 2.4E-08 | | | | |

Site W-SA-1g
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| METHYLENE CHLORIDE | 9.4E-03 | | |
| MERCURY | 4.3E-04 | | |
| TOTALS | 9.9E-03 | 0.0E+00 | .00% |
| RESIDUAL HI = 9.9E-03 | | | |

Site W-SA-2
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+01 | 2.6E-05 | 2.6E-05 | 10.53% |
| DIELDRIN | 8.2E+01 | 8.2E-05 | 8.2E-05 | 33.41% |
| 1,1,2,2-TETRACHLOROETHANE | 2.3E-01 | 2.3E-07 | | |
| TETRACHLOROETHYLENE | 2.9E-02 | 2.9E-08 | | |
| 1,1,2 TRICHLOROETHANE | 1.7E-02 | 1.7E-08 | | |
| TRICHLOROETHYLENE | 2.9E-01 | 2.9E-07 | | |
| ARSENIC | 1.4E+01 | 1.4E-05 | 1.4E-05 | 5.82% |
| CADMIUM | 7.9E-01 | 7.9E-07 | 7.9E-07 | .32% |
| CHROMIUM | 1.2E+02 | 1.2E-04 | 1.2E-04 | 49.91% |
| TOTALS | 2.5E+02 | 2.5E-04 | 2.4E-04 | 100.00% |
| RESIDUAL RISK | | | | 5.7E-07 |

Site W-SA-2
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E-01 | | |
| 1,2-DICHLOROETHYLENE | 3.5E-04 | | |
| DIELDRIN | 2.4E-01 | | |
| ENDRIN | 2.8E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.5E-02 | | |
| TETRACHLOROETHYLENE | 4.2E-04 | | |
| 1,1,1-TRICHLOROETHANE | 1.1E-05 | | |
| 1,1,2-TRICHLOROETHANE | 1.7E-04 | | |
| ARSENIC | 1.2E-02 | | |
| CADMIUM | 6.3E-03 | | |
| CHROMIUM | 1.5E-02 | | |
| COPPER | 3.3E-02 | | |
| LEAD | 3.2E-01 | | |
| MERCURY | 8.7E-03 | | |
| ZINC | 9.3E-03 | | |
| TOTALS | 8.0E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 8.0E-01

Site W-SA-1a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 4.2E-01 | 4.2E-07 | | |
| TOTALS | 4.2E-01 | 4.2E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 4.2E-07

Site W-SA-1a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOLUENE | 1.2E-06 | | |
| CADMIUM | 3.4E-03 | | |
| TOTALS | 3.4E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 3.4E-03

Site W-SA-1b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 3.2E-02 | 3.2E-08 | | |
| TOTALS | 3.2E-02 | 3.2E-08 | 0.0E+00 | .000 |

RESIDUAL RISK = 3.2E-08

Site W-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|------------------------------------|--|
| METHYLENE CHLORIDE | 1.5E-02 | | |
| TOTALS | 1.5E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 1.5E-02

Site W-SA-1C
CARCINOGEN

| CHEMICAL | DI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 2.5E-02 | 2.5E-08 | | |
| TETRACHLOROETHYLENE | 2.7E-02 | 2.7E-08 | | |
| TRICHLOROETHYLENE | 8.8E-04 | 8.8E-10 | | |
| CADMIUM | 1.4E+02 | 1.4E-04 | 1.4E-04 | 100.00% |
| TOTALS | 1.4E+02 | 1.4E-04 | 1.4E-04 | 100.00% |

RESIDUAL RISK = 5.3E-08

Site W-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| METHYLENE CHLORIDE | 1.5E-03 | | |
| TETRACHLOROETHYLENE | 3.0E-04 | | |
| 1,1,1-TRICHLOROETHANE | 8.5E-06 | | |
| CADMIUM | 1.2E+00 | 1.2E+00 | 100.00% |
| COPPER | 3.0E-03 | | |
| LEAD | 6.4E-02 | | |
| ZINC | 2.2E-03 | | |
| TOTALS | 1.2E+00 | 1.2E+00 | 100.00% |

RESIDUAL HI = 7.1E-02

Site W SA-3d
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site W-SA-3d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| METHYL ISOBUTYL KETONE | 4.0E-07 | | |
| TOTALS | 4.0E-07 | 0.0E+00 | .00% |
| RESIDUAL HI - 4.0E 07 | | | |

Site W-SA-4a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site W-SA-4a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI = 0.0E+00

Site W-SA-4b
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 3.7E-02 | 3.7E-08 | | |
| TETRACHLOROETHYLENE | 9.9E-03 | 9.9E-09 | | |
| TRICHLOROETHYLENE | 9.8E-05 | 9.8E-11 | | |
| CHROMIUM | 3.8E+01 | 3.8E-05 | 3.8E-05 | 100.00% |
| TOTALS | 3.8E+01 | 3.8E-05 | 3.8E-05 | 100.00% |

RESIDUAL RISK = 4.7E-08

Site W-SA-4b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| METHYLENE CHLORIDE | 1.7E-02 | | |
| TETRACHLOROETHYLENE | 5.6E-05 | | |
| TOLUENE | 3.1E-06 | | |
| CHROMIUM | 4.5E-03 | | |
| COPPER | 1.1E-03 | | |
| MERCURY | 9.7E-04 | | |
| ZINC | 1.3E-03 | | |
| TOTALS | 2.5E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.5E-02

Site W-5A-5a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| TETRACHLOROETHYLENE | 1.1E-03 | 1.1E-09 | | |
| TOTALS | 1.1E-03 | 1.1E-09 | 0.0E+00 | .00% |

RESIDUAL RISK = 1.1E-09

Site W-SA-5a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| TETRACHLOROETHYLENE | 7.9E-05 | | |
| TOTALS | 7.9E-05 | 0.0E+00 | .00% |

RESIDUAL HI = 7.9E-05

Site W-SA-5b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK - 0.0E+00

Site W-SA-5b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| 1,1,1-TRICHLOROETHANE | 1.9E-07 | | |
| COPPER | 8.2E-04 | | |
| LEAD | 2.4E-02 | | |
| MERCURY | 3.0E-04 | | |
| ZINC | 1.0E-03 | | |
| TOTALS | 2.6E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.6E-02

Site W-SA-5c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site W-SA-5c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL HI = 0.0E+00

Site W-SA-5d
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.7E+01 | 1.7E-05 | 1.7E-05 | 1.05% |
| DIELDRIN | 3.3E+01 | 3.3E-05 | 3.3E-05 | 2.00% |
| TETRACHLOROETHYLENE | 7.4E-03 | 7.4E-09 | | |
| ARSENIC | 1.1E+01 | 1.1E-05 | 1.1E-05 | .68% |
| CADMIUM | 6.7E-01 | 6.7E-07 | | |
| CHROMIUM | 1.6E+03 | 1.6E-03 | 1.6E-03 | 96.26% |
| TOTALS | 1.6E+03 | 1.6E-03 | 1.6E-03 | 100.00% |

RESIDUAL RISK = 6.7E-07

Site W-SA-5d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| ALDRIN | 7.9E-02 | | |
| BICYCLOHEPTADIENE | 7.3E-05 | | |
| DICYCLOPENTADIENE | 2.3E-03 | | |
| DIELDRIN | 9.5E-02 | | |
| ISODRIN | 5.1E-01 | 5.1E-01 | 35.71% |
| TETRACHLOROETHYLENE | 3.9E-05 | | |
| ARSENIC | 9.5E-03 | | |
| CADMIUM | 5.4E-03 | | |
| CHROMIUM | 1.9E-01 | | |
| COPPER | 1.7E-01 | | |
| LEAD | 9.1E-01 | 9.1E-01 | 64.29% |
| MERCURY | 5.6E-03 | | |
| ZINC | 9.3E-03 | | |
| TOTALS | 2.0E+00 | 1.4E+00 | 100.00% |

RESIDUAL HI = 5.7E-01

Site W-SA-6a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 9.6E-08 | 9.6E-14 | | |
| DIBROMOCHLOROPROPANE | 7.2E-03 | 7.2E-09 | | |
| TETRACHLOROETHYLENE | 3.6E-04 | 3.6E-10 | | |
| TRICHLOROETHYLENE | 1.2E-02 | 1.2E-08 | | |
| ARSENIC | 1.7E+01 | 1.7E-05 | 1.7E-05 | 3.7% |
| CADMIUM | 3.9E+00 | 3.9E-06 | 3.9E-06 | .8% |
| CHROMIUM | 4.3E+02 | 4.3E-04 | 4.3E-04 | 95.3% |
| TOTALS | 4.5E+02 | 4.5E-04 | 4.5E-04 | 100.0% |

RESIDUAL RISK = 2.0E 08

Site W-SA-6a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| ALDRIN | 4.4E-10 | | |
| TETRACHLOROETHYLENE | 2.6E-05 | | |
| TOLUENE | 1.6E-05 | | |
| ARSENIC | 1.4E-02 | | |
| CADMIUM | 3.2E-02 | | |
| CHROMIUM | 5.2E-02 | | |
| COPPER | 3.9E-03 | | |
| LEAD | 9.1E-01 | 9.1E-01 | 100.00% |
| MERCURY | 8.2E-04 | | |
| ZINC | 1.6E-02 | | |
| TOTALS | 1.0E+00 | 9.1E-01 | 100.00% |

RESIDUAL HI = 1.2E-01

Site W-SA 6b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK - 0.0E+00

Site W-SA-6b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------|---------|------------------------------------|--|
| ETHYLBENZENE | 5.5E-05 | | |
| TOLUENE | 8.4E-06 | | |
| M-XYLENE | 6.9E-06 | | |
| LEAD | 3.6E-02 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 3.7E-02 | 0.0E+00 | .00% |

RESIDUAL HI ~ 3.7E-02

Site W-SA-6c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site W-SA-6c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| LEAD | 2.0E-02 | | |
| TOTALS | 2.0E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.0E-02 | | | |

Site W-SA 6d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 7.4E+00 | 7.4E-06 | 7.4E-06 | 100.00% |
| CADMIUM | 5.9E-01 | 5.9E-07 | | |
| TOTALS | 8.0E+00 | 8.0E-06 | 7.4E-06 | 100.00% |

RESIDUAL RISK = 5.9E-07

Site W-SA-6d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ARSENIC | 6.3E-03 | | |
| CADMIUM | 4.8E-03 | | |
| ZINC | 8.6E-03 | | |
| TOTALS | 2.0E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.0E-02 | | | |

Site W-SA-6e
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (b) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00E |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site W-SA 6e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 4.5E-02 | | |
| MERCURY | 5.0E-04 | | |
| TOTALS | 4.5E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 4.5E-02

Site W-SA-7a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| METHYLENE CHLORIDE | 4.4E-03 | 4.4E-09 | | |
| CHROMIUM | 7.1E+01 | 7.1E-05 | 7.1E-05 | 100.00% |
| TOTALS | 7.1E+01 | 7.1E-05 | 7.1E-05 | 100.00% |

RESIDUAL RISK - 4.4E-09

Site W-SA-7a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|------------------------------------|--|
| CHLOROACETIC ACID | 3.8E-02 | | |
| METHYLENE CHLORIDE | 1.9E-03 | | |
| CHROMIUM | 8.5E-03 | | |
| COPPER | 8.8E-03 | | |
| LEAD | 7.8E-02 | | |
| MERCURY | 2.1E-03 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 1.4E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 1.4E-01

Site W-SA-7b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site W-SA-7b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------|---------|------------------------------------|--|
| MERCURY | 9.1E-04 | | |
| TOTALS | 9.1E-04 | 0.0E+00 | .00% |
| RESIDUAL HI - | 9.1E-04 | | |

Site W-SA-Ra
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .000 |

RESIDUAL RISK = 0.0E+00

Site W-SA-8a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| COPPER | 1.2E-03 | | |
| TOTALS | 1.2E-03 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.2E-03 | | | |

Site W-SA-8b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| LEAD | 1.9E-02 | | |
| ZINC | 2.5E-03 | | |
| TOTALS | 2.1E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.1E-02 | | | |

Site W-SA-8b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK - 0.0E+00

Site W-SA-8c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| 1,1,2,2-TETRACHLOROETHANE | 5.1E-02 | 5.1E-08 | | |
| TOTALS | 5.1E-02 | 5.1E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 5.1E-08

Site W-SA-8c
NONCARCINOGEN

FRACTIONAL
HI OF
CONTRIBUTING
CHEMICALS (%)

HI OF
CONTRIBUTING
CHEMICALS

CHEMICAL

.00%

0.0E+00 0.0E+00

TOTALS

RESIDUAL HI = 0.0E+00

EASTERN STUDY AREA

Site E-SA-1a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 3.7E-01 | 3.7E-07 | | |
| TOTALS | 3.7E-01 | 3.7E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.7E-07

Site E-SA-1a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------|---------|------------------------------------|--|
| O,P-XYLENE | 2.0E-06 | | |
| CADMIUM | 3.0E-03 | | |
| LEAD | 2.1E-02 | | |
| TOTALS | 2.4E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.4E-02

Site E-SA-1b
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 5.2E-01 | 5.2E-07 | | |
| CHROMIUM | 4.3E+01 | 4.3E-05 | 4.3E-05 | 100.00% |
| TOTALS | 4.3E+01 | 4.3E-05 | 4.3E-05 | 100.00% |

RESIDUAL RISK = 5.2E-07

Site E-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 4.2E-03 | | |
| CHROMIUM | 5.2E-03 | | |
| COPPER | 2.3E-03 | | |
| LEAD | 3.8E-02 | | |
| TOTALS | 5.0E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 5.0E-02

Site B-SA-1c
CARCINOGEN

| CHEMICAL | RI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 6.7E-01 | 6.7E-07 | | |
| CHROMIUM | 4.9E+01 | 4.9E-05 | 4.9E-05 | 100.00% |
| TOTALS | 5.0E+01 | 5.0E-05 | 4.9E-05 | 100.00% |

RESIDUAL RISK = 6.7E-07

Site E-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 5.4E-03 | | |
| CHROMIUM | 5.9E-03 | | |
| LEAD | 5.0E-02 | | |
| ZINC | 5.8E-04 | | |
| TOTALS | 6.2E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 6.2E-02

Site E-SA-1d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 1.2E+01 | 1.2E-05 | 1.2E-05 | 22.47% |
| CADMIUM | 6.3E-01 | 6.3E-07 | | |
| CHROMIUM | 4.3E+01 | 4.3E-05 | 4.3E-05 | 77.53% |
| TOTALS | 5.6E+01 | 5.6E-05 | 5.6E-05 | 100.00% |

RESIDUAL RISK - 6.3E-07

Site 8-SA-1d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (V) |
|----------|---------|------------------------------------|--|
| ARSENIC | 1.1E-02 | | |
| CADMIUM | 5.1E-03 | | |
| CHROMIUM | 5.2E-03 | | |
| COPPER | 1.9E-03 | | |
| LEAD | 2.7E-02 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 5.0E-02 | 0.0E+00 | .001 |

RESIDUAL HI = 5.0E-02

Site E-SA-2a
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| BENZENE | 2.2E-02 | 2.2E-08 | | |
| CHLOROPH | 1.8E-03 | 1.8E-09 | | |
| TETRACHLOROETHYLENE | 9.9E-03 | 9.9E-09 | | |
| ARSENIC | 8.7E+00 | 8.7E-06 | 8.7E-06 | 52.90% |
| CADMIUM | 7.7E+00 | 7.7E-06 | 7.7E-06 | 47.10% |
| TOTALS | 1.6E+01 | 1.6E-05 | 1.6E-05 | 100.00% |

RESIDUAL RISK = 3.4E-08

Site E-SA-2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| CHLOROFORM | 6.1E-05 | | |
| TETRACHLOROETHYLENE | 6.0E-05 | | |
| ARSENIC | 7.4E-03 | | |
| CADMIUM | 6.2E-02 | | |
| COPPER | 6.0E-03 | | |
| LEAD | 1.6E+00 | 1.6E+00 | 100.00% |
| ZINC | 4.1E-01 | | |
| TOTALS | 2.0E+00 | 1.6E+00 | 100.00% |

RESIDUAL HI = 4.8E-01

Site E-SA-2b
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.9E-06 | 3.9E-12 | | |
| BENZENE | 1.4E-02 | 1.4E-08 | | |
| DIELDRIN | 4.5E-04 | 4.5E-10 | | |
| METHYLENE CHLORIDE | 1.8E-02 | 1.8E-08 | | |
| TRICHLOROETHYLENE | 6.9E-03 | 6.9E-09 | | |
| TOTALS | 3.9E-02 | 3.9E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.9E-08

Site 8-SA-2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.8E-08 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 2.9E-06 | | |
| DIELDRIN | 1.3E-06 | | |
| METHYLENE CHLORIDE | 1.9E-03 | | |
| 1,1,1-TRICHLOROETHANE | 5.8E-05 | | |
| M-XYLENE | 2.8E-06 | | |
| O,P-XYLENE | 2.6E-05 | | |
| TOTALS | 2.0E-03 | 0.0E+00 | .00% |
| RESIDUAL HI - 2.0E-03 | | | |

Site E-SA-2c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| DIELDRIN | 2.5E-02 | 2.5E-08 | | |
| ARSENIC | 2.0E+01 | 2.0E-05 | 2.0E-05 | 100.00% |
| TOTALS | 2.0E+01 | 2.0E-05 | 2.0E-05 | 100.00% |

RESIDUAL RISK = 2.5E-08

Site E-SA-2c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| DIELDRIN | 7.1E-05 | | |
| FLUOROACETIC ACID | 4.8E+00 | 4.8E+00 | 100.00% |
| ARSENIC | 1.7E-02 | | |
| COPPER | 1.5E-03 | | |
| LEAD | 2.0E-02 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 4.8E+00 | 4.8E+00 | 100.00% |
| RESIDUAL HI = 3.9E-02 | | | |

Slt. F. SA- 2a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .000 |

RESIDUAL RISK - 0.0E+00

Site E-SA-1a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| CHLOROACETIC ACID | 7.1E-02 | | |
| TOTALS | 7.1E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 7.1E-02

Site E-SA-1b
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 1.7E+02 | 1.7E-04 | 1.7E-04 | 100.00% |
| CADMIUM | 5.6E-01 | 5.6E-07 | | |
| TOTALS | 1.7E+02 | 1.7E-04 | 1.7E-04 | 100.00% |

RESIDUAL RISK = 5.6E-07

Site E-SA-7b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------|---------|------------------------------------|--|
| DITHANE | 3.9E-02 | | |
| 1,4-OXATHIANE | 3.9E-04 | | |
| THIODIGLYCOL | 6.8E-04 | | |
| ARSENIC | 1.4E-01 | | |
| CADMIUM | 4.5E-03 | | |
| TOTALS | 1.9E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 1.9E-01

Site E SA 3c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|---------|--------------------------------------|--|
| TRICHLOROETHYLENE | 5.6E-03 | 5.6E-09 | | |
| TOTALS | 5.6E-03 | 5.6E-09 | 0.0E+00 | .00% |

RESIDUAL RISK = 5.6E-09

Site E-SA-3c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 2.5E-02 | | |
| ZINC | 1.3E-03 | | |
| TOTALS | 2.6E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.6E-02

Site E-SA-3d
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| TETRACHLOROETHYLENE | 7.4E-03 | 7.4E-09 | | |
| CHROMIUM | 3.6E+01 | 3.6E-05 | 3.6E-05 | 100.00% |
| TOTALS | 3.6E+01 | 3.6E-05 | 3.6E-05 | 100.00% |

RESIDUAL RISK = 7.4E-09

Site E-SA-3d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| P-CHLOROPHENYLMETHYL SULFOXIDE | 6.1E-04 | | |
| DITHIANE | 1.1E-02 | | |
| TETRACHLOROETHYLENE | 4.5E-05 | | |
| THIODIGLYCOL | 1.9E-03 | | |
| TOLUENE | 6.0E-06 | | |
| 1,1,1-TRICHLOROETHANE | 3.4E-05 | | |
| CHROMIUM | 4.3E-03 | | |
| LEAD | 6.4E-02 | | |
| ZINC | 3.9E-03 | | |
| TOTALS | 8.6E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 8.6E-02 | | | |

Site B-S-3e
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| 1,1,2,2-TETRACHLOROETHANE | 6.5E-02 | 6.5E-08 | | |
| TOTALS | 6.5E-02 | 6.5E-08 | 0.0E+00 | .00% |
| RESIDUAL RISK = 6.5E-08 | | | | |

Site E-SA-3e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ISOPROPYL METHYL PHOSPHONIC ACID | 3.9E-04 | | |
| ZINC | 5.9E-04 | | |
| TOTALS | 9.8E-04 | 0.0E+00 | .00% |
| RESIDUAL HI = 9.8E-04 | | | |

Site E-SA If
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00E |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site B-SA-3f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ZINC | 6.4E-04 | | |
| TOTALS | 6.4E-04 | 0.0E+00 | .00% |
| RESIDUAL HI = 6.4E-04 | | | |

Site E SA-1q
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site E-SA 1g
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------|---------|------------------------------------|--|
| CHLORACETIC ACID | 7.7E-02 | | |
| TOTALS | 7.7E-02 | 0.0E+00 | .008 |

RESIDUAL HI = 7.7E 02

Site E-SA-31
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site E-SA 31
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (8) |
|---------------|---------|------------------------------------|--|
| MERCURY | 3.5E-04 | | |
| TOTALS | 3.5E-04 | 0.0E+00 | .008 |
| RESIDUAL HI ~ | 3.5E-04 | | |

Site E SA 4a
CARCINXEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .001 |

RESIDUAL RISK - 0.0E+00

Site E-SA-4a
NONARCINGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| COPPER | 6.8E-04 | | |
| ZINC | 6.6E-04 | | |
| TOTALS | 1.3E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 1.3E-03

Site E SA 4b
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (b) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .008 |

RESIDUAL RISK = 0.0E+00

Site E-SA-4b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 2.1E-02 | | |
| MERCURY | 3.0E-04 | | |
| ZINC | 5.9E-04 | | |
| TOTALS | 2.2E-02 | 0.0E+00 | .008 |

RESIDUAL HI = 2.2E 02

Site R-SA-4c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site 8-SA-4c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| COPPER | 8.8E-03 | | |
| LEAD | 9.6E-02 | | |
| ZINC | 1.1E-03 | | |
| TOTALS | 1.1E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 1.1E-01

Site E-SA-5
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK - 0.0E+00

Site E-SA-5
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| FLUOROACETIC ACID | 1.8E+00 | 1.8E+00 | 100.00% |
| COPPER | 9.5E-04 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 1.8E+00 | 1.8E+00 | 100.00% |

RESIDUAL HI = 1.7E-03

Site E-SA 6a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| CHROMIUM | 4.0E+01 | 4.0E-05 | 4.0E-05 | 100.00% |
| TOTALS | 4.0E+01 | 4.0E-05 | 4.0E-05 | 100.00% |
| RESIDUAL RISK = 0.0E+00 | | | | |

Site E-SA-6a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CHROMIUM | 4.9E-03 | | |
| COPPER | 2.1E-03 | | |
| LEAD | 8.2E-02 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 9.0E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 9.0E-02

Site E SA-6b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site E-SA-6b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| FLUOROACETIC ACID | 2.2E+00 | 2.2E+00 | 100.00% |
| COPPER | 8.1E-04 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 2.2E+00 | 2.2E+00 | 100.00% |

RESIDUAL HI = 1.6E-03

Site B-SA 6c
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 1.3E+01 | 1.3E-05 | 1.3E-05 | 100.00% |
| TOTALS | 1.3E+01 | 1.3E-05 | 1.3E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site E-SA 6C
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| FLUOROACETIC ACID | 6.8E-01 | | |
| ARSENIC | 1.1E-02 | | |
| ZINC | 5.8E-04 | | |
| TOTALS | 6.9E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 6.9E-01 | | | |

SOUTH PLANTS STUDY AREA

| CHEMICAL | FI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------|---|
| ALDRIN | 6.9E+04 | 6.9E-02 | 6.9E-02 | 26.36% |
| BENZENE | 6.3E-01 | 3.3E-07 | | |
| CARBON TETRACHLORIDE | 3.6E+00 | 3.6E-06 | 3.6E-06 | .00% |
| CHLORFANE | 6.6E+02 | 6.6E-04 | 6.6E-04 | .25% |
| CHLOROPOM | 1.4E+03 | 1.4E-03 | 1.4E-03 | .52% |
| DDE | 5.2E+00 | 5.2E-06 | 5.2E-06 | .00% |
| DDT | 1.0E+01 | 1.0E-05 | 1.0E-05 | .00% |
| DIBROMOCHLOROPROPANE | 1.2E+05 | 1.2E-01 | 1.2E-01 | 45.77% |
| DIELDRIN | 5.7E+04 | 5.7E-02 | 5.7E-02 | 21.95% |
| METHYLENE CHLORIDE | 1.2E+00 | 1.2E-06 | 1.2E-06 | .00% |
| 1,1,2,2-TETRACHLOROETHANE | 3.1E+00 | 3.1E-06 | 3.1E-06 | .00% |
| TETRACHLOROETHYLENE | 8.7E-01 | 8.7E-07 | 8.7E-07 | .00% |
| ARSENIC | 1.3E+04 | 1.3E-02 | 1.3E-02 | 4.99% |
| CADMIUM | 9.9E+01 | 9.9E-05 | 9.9E-05 | .04% |
| CHROMIUM | 2.4E+02 | 2.4E-04 | 2.4E-04 | .09% |
| TOTALS | 2.6E+05 | 2.6E-01 | 2.6E-01 | 100.00% |

RESIDUAL RISK = 6.9E 07

Site SP-5A 1b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.6E+01 | 3.6E-05 | 3.6E-05 | 11.9% |
| DDE | 9.1E-02 | 9.1E-08 | | |
| DVT | 3.3E-01 | 3.3E-07 | | |
| DIELDRIN | 2.5E+02 | 2.5E-04 | 2.5E-04 | 81.10% |
| METHYLENE CHLORIDE | 1.2E-02 | 1.2E-08 | | |
| TETRACHLOROETHYLENE | 2.4E-02 | 2.4E-08 | | |
| ARSENIC | 2.1E+01 | 2.1E-05 | 2.1E-05 | 6.96% |
| CALCIUM | 5.1E-01 | 5.1E-07 | | |
| TOTALS | 3.0E+02 | 3.0E-04 | 3.0E-04 | 100.00% |

RESIDUAL RISK = 9.7E-07

Site SP-SA-1b
NON-CARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.7E-01 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 6.0E-04 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 3.6E-04 | | |
| DDT | 4.5E-03 | | |
| DIELDRIN | 7.1E-01 | 7.1E-01 | 100.00% |
| ENDRIN | 1.4E-03 | | |
| ISODRIN | 6.4E-04 | | |
| METHYLENE CHLORIDE | 5.7E-03 | | |
| TETRACHLOROETHYLENE | 1.2E-04 | | |
| THIODIGLYCOL | 1.8E-04 | | |
| 1,1,1-TRICHLOROETHANE | 5.1E-05 | | |
| ARSENIC | 1.8E-02 | | |
| CADMIUM | 4.1E-03 | | |
| COPPER | 9.6E-04 | | |
| LEAD | 2.0E-01 | | |
| MERCURY | 4.1E-03 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 1.1E+00 | 7.1E-01 | 100.00% |
| RESIDUAL HI | 4.1E-01 | | |

Site SP-SA 1c
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.9E+01 | 5.9E-05 | 5.9E-05 | 17.96% |
| CHLORDANE | 1.3E+00 | 1.3E-06 | 1.3E-06 | .40% |
| DDE | 7.5E-01 | 7.5E-07 | | |
| DOT | 3.0E+00 | 3.0E-06 | 3.0E-06 | .90% |
| DIELDRIN | 2.5E+02 | 2.5E-04 | 2.5E-04 | 76.80% |
| ARSENIC | 1.3E+01 | 1.3E-05 | 1.3E-05 | 3.94% |
| TOTALS | 3.3E+02 | 3.3E-04 | 3.3E-04 | 100.00% |

RESIDUAL RISK = 7.5E-07

Site SP-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.7E-01 | | |
| CHLORDANE | 3.9E-02 | | |
| DDT | 4.0E-02 | | |
| DIELDRIN | 7.3E-01 | 7.3E-01 | 100.00% |
| ENDRIN | 1.3E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 2.4E-05 | | |
| ISODRIN | 5.1E-02 | | |
| ARSENIC | 1.1E-02 | | |
| MERCURY | 3.0E-04 | | |
| TOTALS | 1.1E+00 | 7.3E-01 | 100.00% |
| RESIDUAL HI = 4.1E-01 | | | |

Site SP-SA-1d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+02 | 8.6E-04 | 8.6E-04 | 91.31% |
| DDE | 1.0E-02 | 1.0E-08 | | |
| DDT | 5.4E-03 | 5.4E-09 | | |
| DIELDRIN | 8.2E+01 | 8.2E-05 | 8.2E-05 | 8.69% |
| TOTALS | 9.4E+02 | 9.4E-04 | 9.4E-04 | 100.00% |

RESIDUAL RISK = 1.6E-08

Site SP-SA-1d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ALDRIN | 3.9E+00 | 3.9E+00 | 100.00% |
| DDT | 7.3E-05 | | |
| DIELDRIN | 2.4E-01 | | |
| ENDRIN | 1.8E-04 | | |
| ISODRIN | 1.7E-02 | | |
| TOLUENE | 7.7E-06 | | |
| COPPER | 1.5E-03 | | |
| MERCURY | 5.4E-04 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 4.2E+00 | 3.9E+00 | 100.00% |

RESIDUAL HI = 2.6E-01

Site SP-SA-le
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 6.9E+02 | 6.9E-04 | 6.9E-04 | .98% |
| CHLORDANE | 1.3E+00 | 1.3E-06 | 1.3E-06 | .00% |
| DIELDRIN | 8.2E+02 | 8.2E-04 | 8.2E-04 | 1.17% |
| ARSENIC | 6.8E+04 | 6.8E-02 | 6.8E-02 | 97.11% |
| CADMIUM | 5.1E+02 | 5.1E-04 | 5.1E-04 | .73% |
| TOTALS | 7.0E+04 | 7.0E-02 | 7.0E-02 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site SP SA-le
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 3.2E+00 | 3.2E+00 | 3.15% |
| BICYCLOHEPTADIENE | 1.5E-01 | | |
| CHLORDANE | 3.9E-02 | | |
| DICYCLOPENTADIENE | 3.9E+00 | 3.9E+00 | 3.91% |
| DIELDRIN | 2.4E+00 | 2.4E+00 | 2.36% |
| HEXACHLOROCYCLOPENTADIENE | 8.2E+00 | 8.2E+00 | 8.16% |
| ISODRIN | 1.7E-01 | | |
| ARSENIC | 5.8E+01 | 5.8E+01 | 58.00% |
| CADMIUM | 4.1E+00 | 4.1E+00 | 4.11% |
| LEAD | 2.9E-02 | | |
| MERCURY | 2.0E+01 | 2.0E+01 | 20.32% |
| TOTALS | 1.0E+02 | 1.0E+02 | 100.00% |

RESIDUAL HI = 3.9E-01

Site SP-SA 1f
CARCINOGEN

| CHEMICAL | P1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.2E+00 | 5.2E-06 | 5.2E-06 | 3.06% |
| DIELDRIN | 1.6E+02 | 1.6E-04 | 1.6E-04 | 96.94% |
| TOTALS | 1.7E+02 | 1.7E-04 | 1.7E-04 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site SP-SA 1f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.4E-02 | | |
| DIELDRIN | 4.7E-01 | | |
| ENDRIN | 3.5E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 2.6E-02 | | |
| ISODRIN | 3.4E-02 | | |
| MERCURY | 3.9E-04 | | |
| TOTALS | 5.9E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 5.9E-01 | | | |

Site SP-SA-1g
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+00 | 2.6E-06 | 2.6E-06 | .08% |
| BENZENE | 1.4E-01 | 1.4E-07 | | |
| CHLOROPHORM | 9.6E-03 | 9.6E-09 | | |
| DIELDRIN | 1.6E+02 | 1.6E-04 | 1.6E-04 | 5.0% |
| METHYLENE CHLORIDE | 6.1E-03 | 6.1E-09 | | |
| 1,1,2,2-TETRACHLOROETHANE | 6.2E-02 | 6.2E-08 | | |
| TETRACHLOROETHYLENE | 1.2E-04 | 1.2E-10 | | |
| ARSENIC | 3.1E+01 | 3.1E-05 | 3.1E-05 | .95% |
| CADMIUM | 1.7E+00 | 1.7E-06 | 1.7E-06 | .05% |
| CHROMIUM | 3.1E+03 | 3.1E-03 | 3.1E-03 | 91.89% |
| TOTALS | 3.3E+03 | 1.7E-03 | 3.3E-03 | 100.00% |

RESIDUAL RISK = 2.2E-07

Site SP-SA-19
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E-02 | | |
| BICYCLOHEPTADIENE | 1.9E-05 | | |
| CHLOROFORM | 3.0E-04 | | |
| DIELDRIN | 4.7E-01 | | |
| ENDRIN | 7.9E-03 | | |
| ISODRIN | 6.8E-02 | | |
| METHYL ISOBUTYL KETONE | 1.6E-03 | | |
| METHYLENE CHLORIDE | 1.9E-03 | | |
| TETRACHLOROETHYLENE | 8.1E-06 | | |
| ARSENIC | 2.6E-02 | | |
| CADMIUM | 1.4E-02 | | |
| CHROMIUM | 3.7E-01 | | |
| COPPER | 8.1E-03 | | |
| LEAD | 5.0E-01 | 5.0E-01 | 100.00% |
| MERCURY | 5.0E-01 | | |
| ZINC | 1.3E-02 | | |
| | 1.5E-03 | | |
| TOTALS | 1.5E+00 | 5.0E-01 | 100.00% |

RESIDUAL HI = 1.0E+00

Site SP SA-2a
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.4E+00 | 1.4E-06 | 1.4E-06 | .81% |
| BENZENE | 1.1E-01 | 1.1E-07 | | |
| CHLORDANE | 1.5E-01 | 1.5E-07 | | |
| DDE | 8.4E-03 | 8.4E-09 | | |
| DVT | 4.9E-02 | 4.9E-08 | | |
| DIELDRIN | 1.6E+02 | 1.6E-04 | 1.6E-04 | 99.17% |
| METHYLENE CHLORIDE | 5.1E-01 | 5.1E-07 | | |
| 1,1,2,2-TETRACHLOROETHANE | 1.5E-01 | 1.5E-07 | | |
| TOTALS | 1.7E+02 | 1.7E-04 | 1.6E-04 | 100.00% |

RESIDUAL RISK = 9.8E-07

Site SP-SA-2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 6.3E-03 | | |
| CHLORDANE | 4.5E-03 | | |
| DDT | 6.6E-04 | | |
| DICYCLOPENTADIENE | 7.9E-01 | 7.9E-01 | 100.00% |
| DIELDRIN | 4.7E-01 | | |
| ENDRIN | 1.1E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.8E-05 | | |
| ISODRIN | 3.4E-04 | | |
| METHYLENE CHLORIDE | 1.7E-01 | | |
| 1,1,1-TRICHLOROETHANE | 8.9E-05 | | |
| COPPER | 8.8E-04 | | |
| MERCURY | 4.3E-04 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 1.5E+00 | 7.9E-01 | 100.00% |

RESIDUAL HI = 6.6E 01

Site SP-SA-2b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.5E+00 | 4.5E-06 | 4.5E-06 | 20.19% |
| BENZENE | 1.3E+00 | 1.3E-06 | 1.3E-06 | 5.92% |
| CHLORFANE | 6.2E-02 | 6.2E-08 | | |
| DOS | 1.5E-02 | 1.5E-08 | | |
| DOT | 1.4E-02 | 1.4E-08 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 73.89% |
| METHYLENE CHLORIDE | 2.0E-01 | 2.0E-07 | | |
| 1,1,2,2-TETRACHLOROETHANE | 3.4E-01 | 3.4E-07 | | |
| TETRACHLOROETHYLENE | 1.0E-02 | 1.0E-08 | | |
| TOTALS | 2.3E+01 | 2.3E-05 | 2.2E-05 | 100.00% |

RESIDUAL RISK = 6.4E-07

Site SP-SA-2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.0E-02 | | |
| CHLORDANE | 1.9E-03 | | |
| DDT | 1.9E-04 | | |
| DICYCLOPENTADIENE | 1.6E+01 | 1.6E+01 | 100.00% |
| DIELDRIN | 4.7E-02 | | |
| ENDRIN | 1.9E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.2E-02 | | |
| ISODRIN | 6.1E-05 | | |
| METHYL ISOBUTYL KETONE | 6.7E-05 | | |
| METHYLENE CHLORIDE | 3.8E-02 | | |
| TETRACHLOROETHYLENE | 6.2E-05 | | |
| TOLUENE | 2.1E-06 | | |
| O, P-XYLENE | 2.2E-06 | | |
| COPPER | 7.2E-04 | | |
| LEAD | 2.2E-02 | | |
| ZINC | 1.0E-03 | | |
| TOTALS | 1.6E+01 | 1.6E+01 | 100.00% |

RESIDUAL HI = 1.5E-01

Site SP-SA-2c
CARCINOGEN

| CHEMICAL | DI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.7E+01 | 1.7E-05 | 1.7E-05 | 34.44% |
| CHLORDANE | 5.9E-01 | 5.9E-07 | | |
| DDE | 3.3E-02 | 3.3E-08 | | |
| DDT | 8.7E-02 | 8.7E-08 | | |
| DIELDRIN | 3.3E+01 | 3.3E-05 | 3.3E-05 | 65.56% |
| METHYLENE CHLORIDE | 5.6E-02 | 5.6E-08 | | |
| TOTALS | 5.1E+01 | 5.1E-05 | 5.0E-05 | 100.00% |

RESIDUAL RISK = 7.7E-07

Site SP-SA-2c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| ALDRIN | 7.9E-02 | | |
| CHLORDANE | 1.8E-02 | | |
| DDT | 1.2E-03 | | |
| DIELDRIN | 9.5E-02 | | |
| ENDRIN | 6.7E-03 | | |
| ISODRIN | 3.7E-02 | | |
| METHYL ISOBUTYL KETONE | 3.6E-05 | | |
| METHYLENE CHLORIDE | 2.1E-02 | | |
| 1,1,1-TRICHLOROETHANE | 2.5E-05 | | |
| COPPER | 6.5E-04 | | |
| MERCURY | 2.4E-04 | | |
| ZINC | 2.1E-03 | | |
| TOTALS | 2.6E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 2.6E-01

Site SP-SA-2d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.8E+02 | 5.8E-04 | 5.8E-04 | 97.81% |
| BENZENE | 9.1E-03 | 9.1E-09 | | |
| CHLORIDANE | 9.2E-02 | 9.2E-08 | | |
| DDG | 1.4E-02 | 1.4E-08 | | |
| DYT | 1.6E-02 | 1.6E-08 | | |
| DIELDRIN | 1.3E+01 | 1.3E-05 | 1.3E-05 | 2.19% |
| TOTALS | 6.0E+02 | 6.0E-04 | 6.0E-04 | 100.00% |

RESIDUAL RISK = 1.3E-07

Site SP-SA-2d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|------------------------------------|--|
| ALDRIN | 2.7E+00 | 2.7E+00 | 100.00% |
| CHLORDANE | 2.8E-03 | | |
| DDT | 2.1E-04 | | |
| DIELDRIN | 3.8E-02 | | |
| ENDRIN | 1.4E-03 | | |
| ISODRIN | 2.2E-02 | | |
| COPPER | 1.3E-03 | | |
| MERCURY | 7.8E-04 | | |
| ZINC | 9.3E-04 | | |
| TOTALS | 2.7E+00 | 2.7E+00 | 100.00% |

RESIDUAL HI = 6.7E 02

Site SP-SA-2e
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| BENZENE | 2.9E-01 | 2.9E-07 | | |
| DIBROMOCHLOROPROPANE | 1.8E+00 | 1.8E-06 | 1.8E-06 | 2.21% |
| DIELDRIN | 4.1E+01 | 4.1E-05 | 4.1E-05 | 48.82% |
| CHROMIUM | 4.1E+01 | 4.1E-05 | 4.1E-05 | 48.97% |
| TOTALS | 8.4E+01 | 8.4E-05 | 8.4E-05 | 100.00% |

RESIDUAL RISK = 2.9E-07

Site SP-SA-2e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| DICYCLOPENTADIENE | 1.9E+01 | 1.9E+01 | 100.00% |
| DIELDRIN | 1.2E-01 | | |
| ETHYLENETHIOCARBAZOLE | 6.3E-06 | | |
| M-XYLENE | 1.1E-05 | | |
| O,P-XYLENE | 6.8E-05 | | |
| CHROMIUM | 5.0E-03 | | |
| COPPER | 7.2E-04 | | |
| ZINC | 6.3E-04 | | |
| TOTALS | 1.9E+01 | 1.9E+01 | 100.00% |

RESIDUAL HI ~ 1.2E-01

Site SP-SA-3a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.3E+03 | 5.3E-03 | 5.3E-03 | 91.06% |
| CHLORDANE | 3.7E-01 | 3.7E-07 | | |
| DDE | 1.3E-02 | 1.3E-08 | | |
| DDT | 3.5E-01 | 3.5E-07 | | |
| DIELDRIN | 5.2E+02 | 5.2E-04 | 5.2E-04 | 8.94% |
| TOTALS | 5.8E+03 | 5.8E-03 | 5.8E-03 | 100.00% |

RESIDUAL RISK ~ 7.3E-07

Site SP-5A-1a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.4E+01 | 2.4E+01 | 94.17% |
| CHLORDANE | 1.1E-02 | | |
| DDT | 4.7E-03 | | |
| DIELDRIN | 1.5E+00 | 1.5E+00 | 5.83% |
| ENDRIN | 4.7E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 6.3E-05 | | |
| ISODRIN | 4.4E-01 | | |
| TOTALS | 2.6E+01 | 2.6E+01 | 100.00% |

RESIDUAL HI = 4.6E-01

Site SP-SA-3b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.5E+05 | 1.5E-01 | 1.5E-01 | 97.67% |
| CHLORDANE | 2.0E+02 | 2.0E-04 | 2.0E-04 | .1% |
| CHLOROFORM | 1.8E-03 | 1.8E-09 | | |
| DDE | 3.5E-01 | 3.5E-07 | | |
| DDT | 1.2E+00 | 1.2E-06 | 1.2E-06 | .00% |
| DIBROMOCHLOROPROPANE | 8.1E-03 | 8.1E-09 | | |
| 1,2-DICHLOROETHANE | 1.1E-01 | 1.1E-07 | | |
| DIELDRIN | 3.3E+03 | 3.3E-03 | 3.3E-03 | 2.1% |
| 1,1,2,2-TETRACHLOROETHANE | 2.1E-02 | 2.1E-08 | | |
| ARSENIC | 1.9E+01 | 1.9E-05 | 1.9E-05 | .01% |
| TOTALS | 1.5E+05 | 1.5E-01 | 1.5E-01 | 100.00% |

RESIDUAL RISK - 4.8E-07

Site SP-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| ALDRIN | 6.7E+02 | 6.7E+02 | 95.55% |
| ATRAZINE | 1.4E-04 | | |
| CHLORDANE | 5.9E+00 | 5.9E+00 | .84% |
| CHLOROPH | 5.2E-05 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 1.2E-01 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 5.2E-03 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 1.4E-03 | | |
| DDE | 1.7E-02 | | |
| DICYCLOPENTADIENE | 3.6E-01 | | |
| DIELDRIN | 9.5E+00 | 9.5E+00 | 1.35% |
| DITROPYLMETHYL PHOSPHONATE | 1.2E-06 | | |
| ENDRIN | 5.1E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 6.5E-01 | 6.5E-01 | .09% |
| ISODRIN | 1.5E+01 | 1.5E+01 | 2.17% |
| ARSENIC | 1.6E-02 | | |
| COPPER | 4.2E-03 | | |
| LEAD | 3.5E-02 | | |
| MERCURY | 4.8E-03 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 7.0E+02 | 7.0E+02 | 100.00% |

RESIDUAL HI = 6.2E-01

Site SP-SA-3c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 7.7E+03 | 7.7E-03 | 7.7E-03 | 80.08% |
| DDT | 2.4E-03 | 2.4E-09 | | |
| DIELDRIN | 7.7E-03 | 7.7E-09 | | |
| METHYLENE CHLORIDE | 1.6E+03 | 1.6E-03 | 1.6E-03 | 16.94% |
| | 1.1E-03 | 1.1E-09 | | |
| CADMIUM | 2.9E-01 | 2.9E-07 | | |
| CHROMIUM | 2.9E+02 | 2.9E-04 | 2.9E-04 | 2.98% |
| TOTALS | 9.7E+03 | 9.7E-03 | 9.7E-03 | 100.00% |

RESIDUAL RISK = 3.0E-07

Site SP-SA-3c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 3.5E+01 | 3.5E+01 | 83.14% |
| P-CHLOROPHENYLMETHYL SULFONE | 3.6E-05 | | |
| DVT | 1.0E-04 | | |
| DIELDRIN | 4.7E+00 | 4.7E+00 | 11.09% |
| ENDRIN | 1.5E-04 | | |
| ISODRIN | 6.8E-03 | | |
| METHYLENE CHLORIDE | 2.1E-07 | | |
| CADMIUM | 2.3E-03 | | |
| CHROMIUM | 3.5E-02 | | |
| COPPER | 9.6E-04 | | |
| LEAD | 2.5E+00 | 2.5E+00 | 5.77% |
| MERCURY | 3.7E-03 | | |
| ZINC | 1.1E-02 | | |
| TOTALS | 4.3E+01 | 4.3E+01 | 100.00% |

RESIDUAL HI = 6.0E-02

Site SP-SA 3d
CARCINOGEN

| CHEMICAL | RI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.7E+01 | 1.7E-05 | 1.7E-05 | 23.26% |
| CHLORDANE | 1.9E+00 | 1.9E-06 | 1.9E-06 | 2.58% |
| DDC | 1.3E-02 | 1.3E-08 | | |
| DDT | 7.0E-01 | 7.0E-07 | | |
| DIELDRIN | 5.5E+01 | 5.5E-05 | 5.5E-05 | 74.15% |
| TOTALS | 7.5E+01 | 7.5E-05 | 7.4E-05 | 100.00% |

RESIDUAL RISK = 7.1E-07

Site SP-SA-3d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 7.9E-02 | | |
| CHLORDANE | 5.7E-02 | | |
| DDT | 9.5E-03 | | |
| DIELDRIN | 1.6E-01 | | |
| ENDRIN | 4.7E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 9.5E-04 | | |
| ISODRIN | 1.3E-03 | | |
| LEAD | 3.1E-02 | | |
| ZINC | 6.9E-04 | | |
| TOTALS | 3.4E-01 | 0.0E+00 | .00% |
| RESIDUAL HI | 3.4E-01 | | |

Site SP-SA-3e
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| DIELDRIN | 2.5E+01 | 2.5E-05 | 2.5E-05 | 100.00% |
| TOTALS | 2.5E+01 | 2.5E-05 | 2.5E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site SP-SA-3e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| O,P-XYLENE | 1.6E-06 | | |
| DICYCLOPENTADIENE | 8.7E-01 | | |
| DIELDRIN | 7.1E-02 | | |
| M-XYLENE | 2.7E-05 | | |
| COPPER | 7.2E-04 | | |
| LEAD | 4.3E-02 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 9.9E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 9.9E-01

Site SP-SA-4a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 9.4E+03 | 9.4E-03 | 9.4E-03 | 92.07% |
| CHLORDANE | 6.1E+00 | 6.1E-06 | 6.1E-06 | .06% |
| DDE | 3.8E-01 | 3.8E-07 | | |
| DDT | 4.2E-01 | 4.2E-07 | | |
| DIELDRIN | 7.2E+02 | 7.2E-04 | 7.2E-04 | 7.01% |
| METHYLENE CHLORIDE | 8.4E-01 | 8.4E-07 | 8.4E-07 | .01% |
| CHROMIUM | 8.7E+01 | 8.7E-05 | 8.7E-05 | .85% |
| TOTALS | 1.0E+04 | 1.0E-02 | 1.0E-02 | 100.00% |

RESIDUAL RISK = 8.0E-07

Site SP-SA-4a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 4.3E+01 | 4.3E+01 | 93.68% |
| CHLORDANE | 1.8E-01 | | |
| DDT | 5.7E-03 | | |
| DIELDRIN | 2.1E+00 | 2.1E+00 | 4.50% |
| ENDRIN | 1.3E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 4.9E-04 | | |
| ISODRIN | 8.4E-01 | 8.4E-01 | 1.82% |
| METHYLENE CHLORIDE | 3.8E-01 | | |
| CHROMIUM | 1.1E-02 | | |
| COPPER | 1.9E-03 | | |
| LEAD | 3.1E-01 | | |
| MERCURY | 1.8E-03 | | |
| ZINC | 1.9E-03 | | |
| TOTALS | 4.7E+01 | 4.6E+01 | 100.00% |

RESIDUAL HI = 9.0E-01

Site SP-SA-4b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.3E+01 | 4.3E-05 | 4.3E-05 | 34.44% |
| DIELDRIN | 8.2E+01 | 8.2E-05 | 8.2E-05 | 65.56% |
| METHYLENE CHLORIDE | 2.0E-02 | 2.0E-08 | | |
| TETRACHLOROETHYLENE | 7.7E-03 | 7.7E-09 | | |
| TOTALS | 1.2E+02 | 1.2E-04 | 1.2E-04 | 100.00% |

RESIDUAL RISK = 2.8E-08

Site SP-SA-4b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.0E-01 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 2.6E-05 | | |
| DIELDRIN | 2.4E-01 | | |
| METHYL ISOBUTYL KETONE | 6.0E-05 | | |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| TETRACHLOROETHYLENE | 6.5E-05 | | |
| COPPER | 1.3E-03 | | |
| LEAD | 7.8E-02 | | |
| MERCURY | 1.8E-03 | | |
| ZINC | 2.0E-03 | | |
| TOTALS | 5.2E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 5.2E-01 | | | |

Site SP-SA-5a
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| DIELDRIN | 4.1E+01 | 4.1E-05 | 4.1E-05 | 100.000 |
| CADMIUM | 3.3E-01 | 3.3E-07 | | |
| TOTALS | 4.1E+01 | 4.1E-05 | 4.1E-05 | 100.000 |

RESIDUAL RISK = 3.3E-07

Site SP-SA-5a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| DIELDRIN | 1.2E-01 | | |
| METHYL ISOBUTYL KETONE | 2.9E-05 | | |
| CADMIUM | 2.6E-03 | | |
| COPPER | 1.8E-03 | | |
| LEAD | 5.5E-02 | | |
| MERCURY | 6.9E-03 | | |
| ZINC | 1.9E-03 | | |
| TOTALS | 1.9E-01 | 0.0E+00 | .00% |
| RESIDUAL HI - | 1.9E-01 | | |

Site SP-SA-5b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.3E-01 | 5.3E-07 | | |
| CHLORDANE | 2.3E-01 | 2.3E-07 | | |
| DDE | 1.9E-03 | 1.9E-09 | | |
| DOT | 3.1E-02 | 3.1E-08 | | |
| DIELDRIN | 5.7E+01 | 5.7E-05 | 5.7E-05 | 35.35% |
| METHYLENE CHLORIDE | 3.5E-02 | 3.5E-08 | | |
| TRICHLOROETHYLENE | 4.3E-03 | 4.3E-09 | | |
| CHROMIUM | 1.0E+02 | 1.0E-04 | 1.0E-04 | 64.65% |
| TOTALS | 1.6E+02 | 1.6E-04 | 1.6E-04 | 100.00% |

RESIDUAL RISK = 8.4E-07

Site SP-SA-5b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.4E-03 | | |
| CHLORDANE | 6.9E-03 | | |
| DDT | 4.3E-04 | | |
| DICYCLOPENTADIENE | 2.2E-01 | | |
| DIELDRIN | 1.7E-01 | | |
| ENDRIN | 6.7E-04 | | |
| ETHYLBENZENE | 1.8E-05 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.4E-03 | | |
| ISODRIN | 2.0E-04 | | |
| METHYLENE CHLORIDE | 5.7E-03 | | |
| TOLUENE | 4.5E-07 | | |
| CHROMIUM | 1.3E-02 | | |
| COPPER | 7.2E-04 | | |
| LEAD | 9.1E-02 | | |
| MERCURY | 1.1E-03 | | |
| ZINC | 1.1E-03 | | |
| TOTALS | 5.1E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 5.1E-01 | | | |

Site SP-SA-6
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| DIELDRIN | 3.3E+00 | 3.3E-06 | 3.3E-06 | 30.55% |
| ARSENIC | 7.4E+00 | 7.4E-06 | 7.4E-06 | 69.45% |
| TOTALS | 1.1E+01 | 1.1E-05 | 1.1E-05 | 100.00% |

RESIDUAL RISK -- 9.1E-13

Site SP-SA-6
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| DIELDRIN | 9.5E-03 | | |
| METHYL ISOBUTYL KETONE | 3.5E-05 | | |
| ARSENIC | 6.3E-03 | | |
| COPPER | 1.4E-03 | | |
| LEAD | 5.9E-02 | | |
| ZINC | 1.1E-03 | | |
| TOTALS | 7.8E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 7.8E-02

Site SP-SA-7a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| DIELDRIN | 4.1E+00 | 4.1E-06 | 4.1E-06 | 100.00% |
| TETRACHLOROETHYLENE | 7.3E-03 | 7.3E-09 | | |
| TOTALS | 4.1E+00 | 4.1E-06 | 4.1E-06 | 100.00% |

RESIDUAL RISK = 7.3E-09

Site SP-SA-7a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| DIELDRIN | 1.2E-02 | | |
| TETRACHLOROETHYLENE | 3.6E-05 | | |
| TOTALS | 1.2E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.2E-02 | | | |

Site SP-SA-7b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.2E-01 | 4.2E-07 | | |
| DDT | 7.5E-04 | 7.5E-10 | | |
| DDT | 3.5E-01 | 3.5E-07 | | |
| DIELDRIN | 2.0E+00 | 2.0E-06 | 2.0E-06 | 8.30% |
| ARSENIC | 2.2E+01 | 2.2E-05 | 2.2E-05 | 91.70% |
| TOTALS | 2.4E+01 | 2.4E-05 | 2.4E-05 | 100.00% |

RESIDUAL RISK = 7.7E-07

Site SP-SA-7b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ALDRIN | 1.9E-03 | | |
| DDT | 4.7E-03 | | |
| DIELDRIN | 5.7E-03 | | |
| ARSENIC | 1.8E-02 | | |
| TOTALS | 3.1E-02 | 0.0E+00 | .00% |

RESIDUAL HI - 3.1E-02

Site SP-SA-7c
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| BENZENE | 7.7E-01 | 7.7E-07 | | |
| DIELDRIN | 3.3E+00 | 3.3E-06 | 3.3E-06 | 100.00% |
| TOTALS | 4.0E+00 | 4.0E-06 | 3.3E-06 | 100.00% |

RESIDUAL RISK = 7.7E-07

Site SP-SA-7c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| DIELDRIN | 9.5E-03 | | |
| COPPER | 9.5E-04 | | |
| ZINC | 2.2E-03 | | |
| TOTALS | 1.3E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 1.3E-02

Site SP-SA-8a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 6.9E+02 | 6.9E-04 | 6.9E-04 | 2.67% |
| CHLORDANE | 5.3E+02 | 5.3E-04 | 5.3E-04 | 2.04% |
| DDT | 1.4E-02 | 1.4E-08 | | |
| DIELDRIN | 1.7E+00 | 1.7E-06 | 1.7E-06 | .01% |
| ARSENIC | 2.5E+04 | 2.5E-02 | 2.5E-02 | 95.23% |
| | 1.3E+01 | 1.3E-05 | 1.3E-05 | .05% |
| TOTALS | 2.6E+04 | 2.6E-02 | 2.6E-02 | 100.00% |

RESIDUAL RISK = 1.5E-08

Site SP-SA-8a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 3.2E+00 | 3.2E+00 | 2.02% |
| CHLORDANE | 1.6E+01 | 1.6E+01 | 10.08% |
| DDT | 2.4E-02 | | |
| DIELDRIN | 7.1E+01 | 7.1E+01 | 45.35% |
| ENDRIN | 7.9E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 5.8E+01 | 5.8E+01 | 37.16% |
| ISODRIN | 8.4E+00 | 8.4E+00 | 5.40% |
| ARSENIC | 1.1E-02 | | |
| COPPER | 6.8E-04 | | |
| MERCURY | 2.4E-03 | | |
| ZINC | 7.2E-04 | | |
| TOTALS | 1.6E+02 | 1.6E+02 | 100.00% |

RESIDUAL HI = 1.2E-01

Site SP-SA-8b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+02 | 8.6E-04 | 8.6E-04 | 51.24% |
| DDE | 1.2E-03 | 1.2E-09 | | |
| DDT | 4.0E-02 | 4.0E-08 | | |
| DIELDRIN | 8.2E+02 | 8.2E-04 | 8.2E-04 | 48.76% |
| TOTALS | 1.7E+03 | 1.7E-03 | 1.7E-03 | 100.00% |

RESIDUAL RISK = 4.1E-08

Site SP-SA-8b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E+00 | 3.9E+00 | 62.50% |
| P-CHLOROPHENYLMETHYL SULFONE | 2.5E-05 | | |
| DDT | 5.4E-04 | | |
| DIELDRIN | 2.4E+00 | 2.4E+00 | 37.50% |
| ENDRIN | 1.3E-04 | | |
| ISODRIN | 3.7E-03 | | |
| COPPER | 7.5E-04 | | |
| LEAD | 6.4E-02 | | |
| MERCURY | 1.3E-03 | | |
| ZINC | 7.2E-04 | | |
| TOTALS | 6.4E+00 | 6.3E+00 | 100.00% |

RESIDUAL HI = 7.1E-02

Site SP-SA-8c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site SP-SA-8c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI - 0.0E+00

Site SP-SA-9a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.6E-01 | 5.6E-07 | 5.6E-07 | 1.31% |
| BENZENE | 2.3E-03 | 2.3E-09 | | |
| CHLORDANE | 4.8E-01 | 4.8E-07 | | |
| DDE | 1.2E+00 | 1.2E-06 | 1.2E-06 | 2.71% |
| DOT | 1.9E-01 | 1.9E-07 | | |
| DIELDRIN | 4.1E+01 | 4.1E-05 | 4.1E-05 | 95.98% |
| TOTALS | 4.3E+01 | 4.3E-05 | 4.3E-05 | 100.00% |

RESIDUAL RISK = 6.7E-07

Site SP-SA-9a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 2.6E-03 | | |
| CHLORDANE | 1.4E-02 | | |
| DDT | 2.6E-03 | | |
| DIELDRIN | 1.2E-01 | | |
| ENDRIN | 1.3E-03 | | |
| ISODRIN | 3.2E-04 | | |
| MERCURY | 5.0E-04 | | |
| TOTALS | 1.4E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.4E-01 | | | |

Site SP-SA-9b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site SP-SA-9b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| LEAD | 3.4E-02 | | |
| ZINC | 6.7E-04 | | |
| TOTALS | 3.5E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 3.5E-02 | | | |

Site SP-SA-10
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+05 | 3.4E-01 | 3.4E-01 | 93.15% |
| BENZENE | 3.2E-01 | 3.2E-07 | | |
| CARBON TETRACHLORIDE | 1.4E+01 | 1.4E-05 | 1.4E-05 | .00% |
| CHLOROFORM | 1.4E+00 | 1.4E-06 | 1.4E-06 | .00% |
| DDE | 1.2E+00 | 1.2E-06 | 1.2E-06 | .00% |
| DDT | 8.7E+01 | 8.7E-05 | 8.7E-05 | .02% |
| DIBROMOCHLOROPROPANE | 2.3E+04 | 2.3E-02 | 2.3E-02 | 6.24% |
| 1,2-DICHLOROETHANE | 1.8E+00 | 1.8E-06 | 1.8E-06 | .00% |
| DIELDRIN | 1.6E+03 | 1.6E-03 | 1.6E-03 | .44% |
| METHYLENE CHLORIDE | 4.1E-02 | 4.1E-08 | | |
| TETRACHLOROETHYLENE | 2.2E+00 | 2.2E-06 | 2.2E-06 | .00% |
| 1,1,2-TRICHLOROETHANE | 2.4E-02 | 2.4E-08 | | |
| TRICHLOROETHYLENE | 3.4E-03 | 3.4E-09 | | |
| ARSENIC | 4.6E+02 | 4.6E-04 | 4.6E-04 | .12% |
| CADMIUM | 4.4E+00 | 4.4E-06 | 4.4E-06 | .00% |
| CHROMIUM | 5.6E+01 | 5.6E-05 | 5.6E-05 | .02% |
| TOTALS | 3.7E+05 | 3.7E-01 | 3.7E-01 | 100.00% |

RESIDUAL RISK = 3.3E-07

Site SP-SA-10
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+03 | 1.6E+03 | 97.91% |
| ATRAZINE | 2.4E-03 | | |
| BICYCLOHEPTADIENE | 3.3E-03 | | |
| CARBON TETRACHLORIDE | 1.6E-01 | | |
| CHLOROACETIC ACID | 1.5E-03 | | |
| CHLOROBENZENE | 5.0E-02 | | |
| CHLOROFORM | 1.8E-05 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 1.2E+00 | 1.2E+00 | .07% |
| DDT | 1.2E+00 | | |
| DICYCLOPENTADIENE | 7.7E-03 | | |
| DIELDRIN | 4.7E+00 | 4.7E+00 | .29% |
| ETHYLENE | 2.4E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.0E+01 | 1.0E+01 | .65% |
| ISODRIN | 1.7E+01 | 1.7E+01 | 1.05% |
| METHYL ISOBUTYL KETONE | 1.3E-04 | | |
| METHYLENE CHLORIDE | 1.7E-02 | | |
| PARATHION | 5.9E-03 | | |
| SUPONA | 2.4E-01 | | |
| TETRACHLOROETHYLENE | 1.1E-02 | | |
| THIODIGLYCOL | 5.3E-04 | | |
| TOLUENE | 1.2E-03 | | |
| 1,1,1-TRICHLOROETHANE | 6.4E-06 | | |
| 1,1,2-TRICHLOROETHANE | 2.4E-04 | | |
| M-XYLENE | 1.4E-04 | | |
| O,P-XYLENE | 5.6E-05 | | |
| ARSENIC | 3.9E-01 | 3.9E-01 | .02% |
| CADMIUM | 3.6E-02 | | |
| CHROMIUM | 6.8E-03 | | |
| COPPER | 2.6E-02 | | |
| LEAD | 4.4E-02 | | |
| MERCURY | 1.9E-02 | | |
| ZINC | 5.9E-03 | | |
| TOTALS | 1.6E+03 | 1.6E+03 | 100.00% |
| RESIDUAL HI = 9.9E-01 | | | |

Site SP-SA-11
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 6.0E+01 | 6.0E-05 | 6.0E-05 | 96.08% |
| CHLORFORM | 9.3E-02 | 9.3E-08 | | |
| DIELDRIN | 2.5E+00 | 2.5E-06 | 2.5E-06 | 3.92% |
| TOTALS | 6.3E+01 | 6.3E-05 | 6.3E-05 | 100.00% |

RESIDUAL RISK = 9.3E-08

Site SP-SA-11
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------|---------|------------------------------------|--|
| ALDRIN | 2.8E-01 | | |
| CHLOROFORM | 3.2E-03 | | |
| DIELDRIN | 7.1E-03 | | |
| COPPER | 9.1E-04 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 2.9E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 2.9E-01

Site SP-SA-12
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.3E+00 | 4.3E-06 | 4.3E-06 | 4.99% |
| DIELDRIN | 8.2E+01 | 8.2E-05 | 8.2E-05 | 95.01% |
| TETRACHLOROETHYLENE | 3.9E-05 | 3.9E-11 | | |
| TOTALS | 8.6E+01 | 8.6E-05 | 8.6E-05 | 100.00% |

RESIDUAL RISK = 3.6E-11

Site SP-SA-12
NONCARCINOGEN

| CHEMICAL | HI OF CONTRIBUTING CHEMICALS | | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|------------------------------|------------------------------|---|
| | HI | HI OF CONTRIBUTING CHEMICALS | |
| ALDRIN | 2.0E-02 | | |
| DICYCLOPENTADIENE | 5.9E-03 | | |
| DIELDRIN | 2.4E-01 | | |
| TETRACHLOROETHYLENE | 2.7E-06 | | |
| COPPER | 6.1E-04 | | |
| LEAD | 1.8E-02 | | |
| MERCURY | 1.6E-03 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 2.8E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.8E-01 | | | |

Site SP-SAL2a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E-01 | 8.6E-07 | | |
| DDE | 2.4E-03 | 2.4E-09 | | |
| DDT | 4.0E-03 | 4.0E-09 | | |
| DIELDRIN | 9.8E+00 | 9.8E-06 | 9.8E-06 | 100.00% |
| 1,1,2,2-TETRACHLOROETHANE | 1.0E-01 | 1.0E-07 | | |
| TETRACHLOROETHYLENE | 7.3E-03 | 7.3E-09 | | |
| TOTALS | 1.1E+01 | 1.1E-05 | 9.8E-06 | 100.00% |

RESIDUAL RISK = 9.8E-07

Site SP-SAL2b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+02 | 8.6E-04 | 8.6E-04 | 96.33% |
| DIELDRIN | 3.3E+01 | 3.3E-05 | 3.3E-05 | 3.67% |
| TOTALS | 8.9E+02 | 8.9E-04 | 8.9E-04 | 100.00% |

RESIDUAL RISK = 5.8E-11

Site SP-SAI2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E-03 | | |
| DDT | 5.4E-05 | | |
| DIELDRIN | 2.8E-02 | | |
| ENDRIN | 5.5E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 2.1E-04 | | |
| ISODRIN | 4.6E-05 | | |
| TETRACHLOROETHYLENE | 3.7E-05 | | |
| COPPER | 6.5E-03 | | |
| MERCURY | 5.4E-04 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 4.1E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 4.1E-02

Site SP-SAI2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E+00 | 3.9E+00 | 100.00% |
| DIELDRIN | 9.5E-02 | | |
| ISODRIN | 6.8E-02 | | |
| COPPER | 5.6E-03 | | |
| LEAD | 3.5E-02 | | |
| MERCURY | 6.9E-03 | | |
| ZINC | 1.1E-03 | | |
| TOTALS | 4.2E+00 | 3.9E+00 | 100.00% |
| RESIDUAL HI - 2.1E-01 | | | |

NORTH PLANTS STUDY AREA

Site NP-SA-1
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| DIELDRIN | 5.7E-08 | 5.7E-14 | | |
| CADMIUM | 4.4E-01 | 4.4E-07 | | |
| TOTALS | 4.4E-01 | 4.4E-07 | 0.0E+00 | .00% |
| RESIDUAL RISK = 4.4E-07 | | | | |

Site NP-SR-1
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| DIELDRIN | 1.7E-10 | | |
| CADMIUM | 3.6E-03 | | |
| TOTALS | 3.6E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 3.6E-03

Site NP-SA-2
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| BENZENE | 1.5E-02 | 1.5E-08 | | |
| CHLOROFORM | 2.0E-03 | 2.0E-09 | | |
| TETRACHLOROETHYLENE | 1.5E-02 | 1.5E-08 | | |
| TOTALS | 3.2E-02 | 3.2E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.2E-08

Site NP-SA-2
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| CHLOROFORM | 7.2E-05 | | |
| TETRACHLOROETHYLENE | 7.2E-05 | | |
| ZINC | 5.8E-04 | | |
| TOTALS | 7.2E-04 | 0.0E+00 | .003 |
| RESIDUAL HI = 7.2E-04 | | | |

Site NP-SA-3
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| DIELDRIN | 2.5E+00 | 2.5E-06 | 2.5E-06 | 65.90% |
| TETRACHLOROETHYLENE | 7.5E-03 | 7.5E-09 | | |
| CADMIUM | 1.3E+00 | 1.3E-06 | 1.3E-06 | 34.10% |
| TOTALS | 3.7E+00 | 3.7E-06 | 3.7E-06 | 100.00% |

RESIDUAL RISK = 7.5E-09

Site NP-SA-3
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| DIELDRIN | 7.1E-03 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 7.2E-07 | | |
| TETRACHLOROETHYLENE | 4.9E-05 | | |
| CADMIUM | 1.0E-02 | | |
| LEAD | 5.0E-02 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 6.8E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 6.8E-02

Site NP-SA-4
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NP-SA-4
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| CHLOROACETIC ACID | 1.4E-01 | | |
| ZINC | 6.7E-04 | | |
| TOTALS | 1.4E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.4E-01 | | | |

Site NP-SA-5
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| BENZENE | 2.2E-02 | 2.2E-08 | | |
| ARSENIC | 1.5E+02 | 1.5E-04 | 1.5E-04 | 98.87% |
| CADMIUM | 1.7E+00 | 1.7E-06 | 1.7E-06 | 1.13% |
| TOTALS | 1.5E+02 | 1.5E-04 | 1.5E-04 | 100.00% |

RESIDUAL RISK = 2.2E-08

Site NP-SA-5
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| DIISOPROPYLMETHYL PHOSPHONATE | 2.4E-05 | | |
| 1,1,1-TRICHLOROETHANE | 1.0E-05 | | |
| ARSENIC | 1.3E-01 | | |
| CADMIUM | 1.4E-02 | | |
| COPPER | 1.2E-03 | | |
| LEAD | 8.7E-02 | | |
| MERCURY | 6.3E-04 | | |
| ZINC | 1.9E-03 | | |
| TOTALS | 2.3E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 2.3E-01

Site NP-SA-6
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.8E-01 | 2.8E-07 | | |
| BENZENE | 1.3E-02 | 1.3E-08 | | |
| DIELDRIN | 2.5E+01 | 2.5E-05 | 2.5E-05 | .82% |
| ARSENIC | 3.0E+03 | 3.0E-03 | 3.0E-03 | 99.18% |
| CADMIUM | 5.9E-01 | 5.9E-07 | | |
| TOTALS | 3.0E+03 | 3.0E-03 | 3.0E-03 | 100.00% |

RESIDUAL RISK = 8.9E-07

SITE NP SA 6
NON-AROMATIC

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| ALUMINUM | 1.3E-03 | | |
| DIELDRIN | 7.1E-02 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 3.1E-05 | | |
| ARSENIC | 2.5E+00 | 2.5E+00 | 100.00% |
| CALCIUM | 4.8E-03 | | |
| COPPER | 7.0E-04 | | |
| LEAD | 5.0E-02 | | |
| MERCURY | 6.3E-03 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 2.7E+00 | 2.5E+00 | 100.00% |

RESIDUAL HI - 1.4E-01

Site NP SA 7
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site NP-SA-7
NONCARCINOGEN

FRACTIONAL
HI OF
CONTRIBUTING
CHEMICALS (%)

HI OF
CONTRIBUTING
CHEMICALS

HI

CHEMICAL

.00%

0.0E+00 0.0E+00

0.0E+00

TOTALS

RESIDUAL HI = 0.0E+00

Site NP-SA-8a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NP-SN-8a
 NTNCARCINOGEN

| CHEMICAL | FRACTIONAL | |
|----------|--------------|---------------|
| | HI OF | HI OF |
| | CONTRIBUTING | CONTRIBUTING |
| | CHEMICALS | CHEMICALS (%) |
| LEAD | 2.1E-02 | |
| MERCURY | 2.8E-04 | |
| ZINC | 8.6E-04 | |
| TOTALS | 2.2E-02 | 0.0E+00 |

RESIDUAL HI = 2.2E-02

Site NP-SA-8b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| TETRACHLOROETHYLENE | 7.3E-03 | 7.3E-09 | | |
| TOTALS | 7.3E-03 | 7.3E-09 | 0.0E+00 | .004 |
| RESIDUAL RISK = 7.3E-09 | | | | |

Site NP-SA-8b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|------------------------------------|--|
| TETRACHLOROETHYLENE | 3.5E-05 | | |
| MERCURY | 4.3E-04 | | |
| ZINC | 1.5E-03 | | |
| TOTALS | 2.0E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 2.0E-03

Site NP-SA-8c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 3.1E+01 | 3.1E-05 | 3.1E-05 | 100.00% |
| TOTALS | 3.1E+01 | 3.1E-05 | 3.1E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NP-SA-8c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ARSENIC | 2.6E-02 | | |
| MERCURY | 9.8E-04 | | |
| TOTALS | 2.7E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.7E-02

Site NP-SA-9a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| BENZENE | 6.0E-03 | 6.0E-09 | | |
| TOTALS | 6.0E-03 | 6.0E-09 | 0.0E+00 | .00% |

RESIDUAL RISK = 6.0E-09

Site NP-SA-9a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI = 0.0E+00

Site NP-SA-9b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CHROMIUM | 5.0E+01 | 5.0E-05 | 5.0E-05 | 100.00% |
| TOTALS | 5.0E+01 | 5.0E-05 | 5.0E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NP-SA-9b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CHROMIUM | 6.0E-03 | | |
| TOTALS | 6.0E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 6.0E-03

Site NP-SA 9c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NP-SA-9c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ZINC | 6.1E-04 | | |
| TOTALS | 6.1E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 6.1E-04

Site NP-SA-9d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| BENZENE | 1.5E-02 | 1.5E-08 | | |
| TOTALS | 1.5E-02 | 1.5E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 1.5E-08

Site NP-SA-9d
NONCARCINOGEN

| CHEMICAL | FRACTIONAL | | |
|----------|------------|------------------------------------|--|
| | HI | HI OF CONTRIBUTING CHEMICALS | HI OF CONTRIBUTING CHEMICALS (%) |
| ZINC | 6.5E-04 | | |
| TOTALS | 6.5E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 6.5E-04

Site NP-SA-9f
CARCINOGEN

| Chemical | EI | Risk | Risk of Contributing Chemicals | Fractional Risk of Contributing Chemicals (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 2.7E+01 | 2.7E-05 | 2.7E-05 | 100.00% |
| TOTALS | 2.7E+01 | 2.7E-05 | 2.7E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NP-SA-9f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ARSENIC | 2.3E-02 | | |
| TOTALS | 2.3E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.3E-02 | | | |

CENTRAL STUDY AREA

Site C-SA-1a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.8E+03 | 5.8E-03 | 5.8E-03 | 62.34% |
| BENZENE | 3.9E-01 | 3.9E-07 | 3.9E-07 | .00% |
| CARBON TETRACHLORIDE | 5.9E-01 | 5.9E-07 | 5.9E-07 | .01% |
| CHLORDANE | 2.9E-01 | 2.9E-07 | | |
| CHLOROFORM | 3.2E-02 | 3.2E-08 | | |
| DDE | 3.3E-01 | 3.3E-07 | | |
| DDT | 4.7E-02 | 4.7E-08 | | |
| DIBROMOCHLOROPROPANE | 5.0E+02 | 5.0E-04 | 5.0E-04 | 5.34% |
| 1,2-DICHLOROETHANE | 2.1E-02 | 2.1E-08 | | |
| 1,1-DICHLOROETHYLENE | 6.5E-02 | 6.5E-08 | | |
| DIELDRIN | 3.0E+03 | 3.0E-03 | 3.0E-03 | 32.28% |
| METHYLENE CHLORIDE | 4.0E-03 | 4.0E-09 | | |
| TETRACHLOROETHYLENE | 2.4E+00 | 2.4E-06 | 2.4E-06 | .03% |
| 1,1,2-TRICHLOROETHANE | 6.0E-03 | 6.0E-09 | | |
| TRICHLOROETHYLENE | 1.7E-02 | 1.7E-08 | | |
| CADMIUM | 4.6E-01 | 4.6E-07 | 4.6E-07 | .00% |
| TOTALS | 9.4E+03 | 9.4E-03 | 9.4E-03 | 100.00% |

RESIDUAL RISK = 8.1E-07

Site C-SA-la
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.7E+01 | 2.7E+01 | 16.44% |
| BENZOTHIADIAZOLE | 6.5E-02 | | |
| BICYCLOHEPTADIENE | 1.8E-03 | | |
| CARBON TETRACHLORIDE | 1.5E-02 | | |
| CHLORDANE | 8.7E-03 | | |
| CHLOROBENZENE | 6.7E-05 | | |
| CHLOROPHORM | 1.2E-03 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 6.6E-03 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 1.2E-03 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 2.6E-04 | | |
| DDT | 6.4E-04 | | |
| 1,1-DICHLOROETHYLENE | 2.8E-05 | | |
| DICYCLOPENTADIENE | 1.2E-01 | | |
| DIELDRIN | 8.8E+00 | 8.8E+00 | 5.37% |
| DIISOPROPYLMETHYL PHOSPHONATE | 5.5E-04 | | |
| DIMETHYL DISULFIDE | 1.6E-02 | | |
| DIMETHYL METHYL PHOSPHONATE | 4.4E-05 | | |
| DITHIANE | 1.4E-03 | | |
| ENDRIN | 1.6E+00 | 1.6E+00 | .97% |
| ETHYLBENZENE | 1.2E-04 | | |
| FLUOROACETIC ACID | 4.8E+00 | 4.8E+00 | 2.93% |
| HEXACHLOROCYCLOPENTADIENE | 1.0E+02 | 1.0E+02 | 63.93% |
| ISODRIN | 1.7E+01 | 1.7E+01 | 10.36% |
| METHYL ISOBUTYL KETONE | 5.3E-04 | | |
| METHYLENE CHLORIDE | 1.9E-03 | | |
| TETRACHLOROETHYLENE | 1.2E-02 | | |
| TOLUENE | 1.5E-03 | | |
| 1,1,2-TRICHLOROETHANE | 5.9E-05 | | |
| M-XYLENE | 1.4E-05 | | |
| O,P-XYLENE | 1.7E-05 | | |
| CADMIUM | 3.7E-03 | | |
| LEAD | 3.1E-02 | | |
| MERCURY | 9.8E-04 | | |
| TOTALS | 1.6E+02 | 1.6E+02 | 100.00% |
| RESIDUAL HI - 2.9E-01 | | | |

Site C-SA-1b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.2E+01 | 5.2E-05 | 5.2E-05 | 19.61% |
| BENZENE | 4.4E-02 | 4.4E-08 | | |
| CHLORDANE | 6.6E+01 | 6.6E-05 | 6.6E-05 | 25.04% |
| DDE | 1.7E-01 | 1.7E-07 | | |
| DDT | 4.7E+00 | 4.7E-06 | 4.7E-06 | 1.79% |
| DIBROMOCHLOROPROPANE | 9.3E-01 | 9.3E-07 | 9.3E-07 | .35% |
| DIELDRIN | 1.1E+02 | 1.1E-04 | 1.1E-04 | 43.55% |
| METHYLENE CHLORIDE | 9.5E-02 | 9.5E-08 | | |
| ARSENIC | 2.5E+01 | 2.5E-05 | 2.5E-05 | 9.66% |
| TOTALS | 2.6E+02 | 2.6E-04 | 2.6E-04 | 100.00% |

RESIDUAL RISK = 3.1E-07

Site C-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.4E-01 | | |
| CHLORDANE | 2.0E+00 | 2.0E+00 | 21.86% |
| CHLOROACETIC ACID | 1.9E-01 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 5.7E-05 | | |
| DDT | 6.4E-02 | | |
| DIELDRIN | 3.3E-01 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 7.1E-04 | | |
| DIMETHYL DISULFIDE | 8.6E-04 | | |
| ENDRIN | 5.5E-02 | | |
| FLUOROACETIC ACID | 7.0E+00 | 7.0E+00 | 78.14% |
| HEXACHLOROCYCLOPENTADIENE | 9.0E-04 | | |
| ISODRIN | 1.5E-02 | | |
| ISOPROPYL METHYL PHOSPHONIC ACID | 2.2E-04 | | |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| TOLUENE | 1.4E-05 | | |
| ARSENIC | 2.2E-02 | | |
| LEAD | 2.5E-02 | | |
| MERCURY | 5.2E-02 | | |
| TOTALS | 1.0E+01 | 9.0E+00 | 100.00% |

RESIDUAL HI = 1.0E+00

Site C-SA-1c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+03 | 8.6E-03 | 8.6E-03 | 49.26% |
| CHLORDANE | 4.8E+01 | 4.8E-05 | 4.8E-05 | .26% |
| DDE | 5.2E-01 | 5.2E-07 | | |
| DDT | 4.0E-03 | 4.0E-09 | | |
| DIBROMOCHLOROPROPANE | 1.5E-01 | 1.5E-07 | | |
| DIELDRIN | 4.1E+03 | 4.1E-03 | 4.1E-03 | 23.44% |
| 1,1,2,2-TETRACHLOROETHANE | 8.3E+01 | 8.3E-05 | 8.3E-05 | .47% |
| TETRACHLOROETHYLENE | 2.5E+01 | 2.5E-05 | 2.5E-05 | .14% |
| ARSENIC | 6.8E+01 | 6.8E-05 | 6.8E-05 | .39% |
| CADMIUM | 4.3E+00 | 4.3E-06 | 4.3E-06 | .02% |
| CHROMIUM | 4.5E+03 | 4.5E-03 | 4.5E-03 | 26.01% |
| TOTALS | 1.7E+04 | 1.7E-02 | 1.7E-02 | 100.00% |

RESIDUAL RISK = 6.8E-07

Site C-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E+01 | 3.9E+01 | 66.33% |
| CHLORDANE | 1.4E+00 | 1.4E+00 | 2.32% |
| DDT | 5.4E-05 | | |
| DIELDRIN | 1.2E+01 | 1.2E+01 | 19.90% |
| DIISOPROPYLMETHYL PHOSPHONATE | 3.4E-04 | | |
| DITHIANE | 4.1E-02 | | |
| ENDRIN | 6.3E-03 | | |
| FLUOROACETIC ACID | 3.0E+00 | 3.0E+00 | 5.08% |
| HEXACHLOROCYCLOPENTADIENE | 2.9E-03 | | |
| ISODRIN | 8.5E-03 | | |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.3E-04 | | |
| 1,4-OXATHIANE | 2.0E-05 | | |
| TETRACHLOROETHYLENE | 1.5E-01 | | |
| TOLUENE | 1.3E-05 | | |
| O,P-XYLENE | 9.1E-06 | | |
| ARSENIC | 5.8E-02 | | |
| CADMIUM | 3.5E-02 | | |
| CHROMIUM | 5.5E-01 | 5.5E-01 | .92% |
| COPPER | 4.9E-01 | | |
| LEAD | 3.2E+00 | 3.2E+00 | 5.45% |
| MERCURY | 8.7E-03 | | |
| ZINC | 8.6E-02 | | |
| TOTALS | 6.0E+01 | 5.9E+01 | 100.00% |

RESIDUAL HI = 8.9E-01

Site C-SA-1d
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 6.0E+01 | 6.0E-05 | 6.0E-05 | 39.78% |
| DIELDRIN | 8.2E+01 | 8.2E-05 | 8.2E-05 | 54.08% |
| METHYLENE CHLORIDE | 1.3E-03 | 1.3E-09 | | |
| ARSENIC | 9.3E+00 | 9.3E-06 | 9.3E-06 | 6.15% |
| CADMIUM | 6.7E-01 | 6.7E-07 | | |
| TOTALS | 1.5E+02 | 1.5E-04 | 1.5E-04 | 100.00% |

RESIDUAL RISK 6/1/07

Site C-SA-1d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.8E-01 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 5.0E-04 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 6.5E-05 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 2.9E-04 | | |
| DIELDRIN | 2.4E-01 | | |
| ENDRIN | 3.9E-03 | | |
| FLUOROACETIC ACID | 3.8E+00 | 3.8E+00 | 100.00% |
| ISODRIN | 8.4E-03 | | |
| METHYLENE CHLORIDE | 2.6E-07 | | |
| TOLUENE | 1.7E-06 | | |
| ARSENIC | 7.9E-03 | | |
| CADMIUM | 5.4E-03 | | |
| COPPER | 1.3E-03 | | |
| LEAD | 3.7E-02 | | |
| MERCURY | 4.6E-03 | | |
| ZINC | 1.8E-03 | | |
| TOTALS | 4.4E+00 | 3.8E+00 | 100.00% |

RESIDUAL HI = 5.8E-01

Site C-SA-2a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| DIELDRIN | 2.5E+01 | 2.5E-05 | 2.5E-05 | 100.00% |
| CADMIUM | 3.8E-01 | 3.8E-07 | | |
| TOTALS | 2.5E+01 | 2.5E-05 | 2.5E-05 | 100.00% |
| RESIDUAL RISK = 3.8E-07 | | | | |

Site C-SA-2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| DIELDRIN | 7.1E-02 | | |
| FLUORACETIC ACID | 6.8E-01 | | |
| CADMIUM | 3.1E-03 | | |
| COPPER | 1.6E-03 | | |
| LEAD | 7.3E-02 | | |
| MERCURY | 2.8E-04 | | |
| ZINC | 1.9E-03 | | |
| TOTALS | 8.3E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 8.3E-01 | | | |

Site C-SA-2b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.1E-01 | 8.1E-07 | | |
| DDE | 3.5E-04 | 3.5E-10 | | |
| DDT | 5.2E-04 | 5.2E-10 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 100.00% |
| TOTALS | 1.7E+01 | 1.7E-05 | 1.6E-05 | 100.00% |

RESIDUAL RISK = 8.1E-07

Site C-SA-2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ALDRIN | 3.7E-03 | | |
| DDT | 7.1E-06 | | |
| DIELDRIN | 4.7E-02 | | |
| ENDRIN | 3.9E-05 | | |
| ISODRIN | 5.1E-05 | | |
| TOLUENE | 4.0E-06 | | |
| COPPER | 4.2E-03 | | |
| LEAD | 3.8E-02 | | |
| MERCURY | 2.4E-03 | | |
| ZINC | 1.4E-03 | | |
| TOTALS | 9.7E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 9.7E-02

Site C-SA-2c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site C-SA-2c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------|---------|------------------------------------|--|
| BENZOTHIAZOLE | 1.1E-04 | | |
| TOLUENE | 3.2E-05 | | |
| MERCURY | 3.7E-04 | | |
| TOTALS | 5.1E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 5.1E-04

Site C-SA-2d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site C-SA-2d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| TOLUENE | 2.3E-06 | | |
| TOTALS | 2.3E-06 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.3E-06 | | | |

Site C-SA-3
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site C-SA-3
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| DIISOPROPYLMETHYL PHOSPHONATE | 1.5E-05 | | |
| MERCURY | 1.4E-03 | | |
| TOTALS | 1.4E-03 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.4E-03 | | | |

Site C-SA-4
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.6E-01 | 1.6E-07 | | |
| CHLORDANE | 1.8E-01 | 1.8E-07 | | |
| DDP | 2.1E-03 | 2.1E-09 | | |
| DDT | 2.4E-03 | 2.4E-09 | | |
| DIELDRIN | 4.8E+00 | 4.8E-06 | 4.8E-06 | 100.00% |
| CADMIUM | 4.3E-01 | 4.3E-07 | | |
| TOTALS | 5.6E+00 | 5.6E-06 | 4.8E-06 | 100.00% |
| RESIDUAL RISK = 7.8E-07 | | | | |

Site C-SA-4
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|------------------------------------|--|
| ALDRIN | 7.5E-04 | | |
| CHLORDANE | 5.3E-03 | | |
| DDT | 3.3E-05 | | |
| DIELDRIN | 1.4E-02 | | |
| ENDRIN | 3.5E-04 | | |
| ISODRIN | 1.0E-04 | | |
| CADMIUM | 3.5E-03 | | |
| COPPER | 1.2E-03 | | |
| LEAD | 2.7E-02 | | |
| MERCURY | 2.6E-03 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 5.6E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 5.6E-02

NORTH CENTRAL STUDY AREA

Site NC-SA-1a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+03 | 3.4E-03 | 3.4E-03 | 33.68% |
| BENZENE | 2.4E-02 | 2.4E-08 | | |
| CHLORDANE | 2.6E+02 | 2.6E-04 | 2.6E-04 | 2.58% |
| CHLOROFORM | 8.7E-04 | 8.7E-10 | | |
| DDE | 1.7E+00 | 1.7E-06 | 1.7E-06 | .02% |
| DDT | 1.0E+01 | 1.0E-05 | 1.0E-05 | .10% |
| DIBROMOCHLOROPROPANE | 5.0E-03 | 5.0E-09 | | |
| DIELDRIN | 5.7E+03 | 5.7E-03 | 5.7E-03 | 56.08% |
| METHYLENE CHLORIDE | 8.1E-03 | 8.1E-09 | | |
| TETRACHLOROETHYLENE | 8.0E-02 | 8.0E-08 | | |
| TRICHLOROETHYLENE | 6.3E-03 | 6.3E-09 | | |
| ARSENIC | 6.8E+02 | 6.8E-04 | 6.8E-04 | 6.68% |
| CADMIUM | 1.1E+00 | 1.1E-06 | 1.1E-06 | .01% |
| CHROMIUM | 8.7E+01 | 8.7E-05 | 8.7E-05 | .85% |
| TOTALS | 1.0E+04 | 1.0E-02 | 1.0E-02 | 100.00% |

RESIDUAL RISK = 1.2E-07

Site NC-SA-1a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+01 | 1.6E+01 | 33.24% |
| CHLORDANE | 7.9E+00 | 7.9E+00 | 16.62% |
| CHLOROBENZENE | 3.0E-04 | | |
| CHLOROFORM | 3.2E-05 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 3.2E-04 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 1.2E-04 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 3.6E-04 | | |
| DDT | 1.4E-01 | | |
| DICYCLOPENTADIENE | 2.6E-03 | | |
| DIELDRIN | 1.7E+01 | 1.7E+01 | 34.90% |
| DIISOPROPYLMETHYL PHOSPHONATE | 1.5E-04 | | |
| DITHIANE | 9.5E-05 | | |
| ENDRIN | 3.5E-01 | | |
| ETHYLBENZENE | 8.5E-05 | | |
| FLUOROACETIC ACID | 5.3E+00 | 5.3E+00 | 11.14% |
| HEXACHLOROCYCLOPENTADIENE | 2.6E-01 | | |
| ISODRIN | 8.3E-01 | 8.3E-01 | 1.74% |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.9E-05 | | |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| TETRACHLOROETHYLENE | 3.9E-04 | | |
| TOLUENE | 3.4E-06 | | |
| M-XYLENE | 1.5E-05 | | |
| O, P-XYLENE | 1.5E-05 | | |
| ARSENIC | 5.8E-01 | 5.8E-01 | 1.23% |
| CADMIUM | 8.7E-03 | | |
| CHROMIUM | 1.1E-02 | | |
| COPPER | 3.7E-03 | | |
| LEAD | 5.5E-02 | | |
| MERCURY | 5.4E-01 | 5.4E-01 | 1.14% |
| ZINC | 1.4E-03 | | |
| TOTALS | 4.8E+01 | 4.7E+01 | 100.00% |

RESIDUAL HI = 8.4E-01

Site NC-SA-1b
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.2E+03 | 5.2E-03 | 5.2E-03 | 80.66% |
| BENZENE | 1.2E-01 | 1.2E-07 | | |
| CHLORDANE | 2.0E+01 | 2.0E-05 | 2.0E-05 | .31% |
| CHLOROFORM | 3.1E-02 | 3.1E-08 | | |
| DDE | 4.4E+00 | 4.4E-06 | 4.4E-06 | .07% |
| DDT | 1.2E+00 | 1.2E-06 | 1.2E-06 | .02% |
| DIBROMOCHLOROPROPANE | 1.9E-02 | 1.9E-08 | | |
| DIELDRIN | 9.8E+02 | 9.8E-04 | 9.8E-04 | 15.35% |
| METHYLENE CHLORIDE | 1.4E-02 | 1.4E-08 | | |
| TETRACHLOROETHYLENE | 6.1E-03 | 6.1E-09 | | |
| ARSENIC | 2.3E+02 | 2.3E-04 | 2.3E-04 | 3.59% |
| CADMIUM | 4.8E-01 | 4.8E-07 | | |
| TOTALS | 6.4E+03 | 6.4E-03 | 6.4E-03 | 100.00% |

RESIDUAL RISK = 6.7E-07

Site NC-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.4E+01 | 2.4E+01 | 24.24% |
| CHLORDANE | 5.9E-01 | 5.9E-01 | .61% |
| CHLOROBENZENE | 1.9E-04 | | |
| CHLOROFORM | 1.1E-03 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 1.2E-03 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 3.3E-03 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 7.1E-04 | | |
| DDT | 1.7E-02 | | |
| DICYCLOPENTADIENE | 2.4E-02 | | |
| DIELDRIN | 2.8E+00 | 2.8E+00 | 2.91% |
| ENDRIN | 1.6E-01 | | |
| FLUOROACETIC ACID | 6.5E+01 | 6.5E+01 | 67.05% |
| HEXACHLOROCYCLOPENTADIENE | 5.8E-03 | | |
| ISODRIN | 5.1E+00 | 5.1E+00 | 5.19% |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| TETRACHLOROETHYLENE | 3.2E-05 | | |
| TOLUENE | 1.6E-05 | | |
| ARSENIC | 2.0E-01 | | |
| CADMIUM | 3.9E-03 | | |
| COPPER | 4.7E-03 | | |
| LEAD | 1.0E-01 | | |
| MERCURY | 2.4E-01 | | |
| ZINC | 3.6E-03 | | |
| TOTALS | 9.8E+01 | 9.8E+01 | 100.00% |

RESIDUAL HI = 7.7E-01

Site NC-SA-1c
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.0E-01 | 4.0E-07 | | |
| CHLORDANE | 7.2E-02 | 7.2E-08 | | |
| DDE | 5.1E-02 | 5.1E-08 | | |
| DDT | 1.7E-03 | 1.7E-09 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 31.65% |
| TETRACHLOROETHYLENE | 4.9E-03 | 4.9E-09 | | |
| ARSENIC | 3.5E+01 | 3.5E-05 | 3.5E-05 | 68.35% |
| TOTALS | 5.2E+01 | 5.2E-05 | 5.2E-05 | 100.00% |

RESIDUAL RISK = 5.3E-07

Site NC-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.9E-03 | | |
| CHLORDANE | 2.2E-03 | | |
| DDT | 2.4E-05 | | |
| DIELDRIN | 4.7E-02 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 8.1E-05 | | |
| ENDRIN | 7.9E-03 | | |
| FLUOROACETIC ACID | 2.3E+00 | 2.3E+00 | 100.00% |
| ISODRIN | 3.9E-04 | | |
| TETRACHLOROETHYLENE | 2.4E-05 | | |
| ARSENIC | 3.0E-02 | | |
| MERCURY | 4.1E-03 | | |
| TOTALS | 2.4E+00 | 2.3E+00 | 100.00% |

RESIDUAL HI = 9.4E-02

Site NC-SA-1d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.0E-01 | 4.0E-07 | | |
| CHLORDANE | 7.2E-02 | 7.2E-08 | | |
| DDE | 4.2E-03 | 4.2E-09 | | |
| DDT | 7.2E-03 | 7.2E-09 | | |
| DIBROMOCHLOROPROPANE | 9.5E-03 | 9.5E-09 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 67.00% |
| ARSENIC | 8.1E+00 | 8.1E-06 | 8.1E-06 | 33.00% |
| TOTALS | 2.5E+01 | 2.5E-05 | 2.4E-05 | 100.00% |

RESIDUAL RISK = 4.9E-07

Site NC-SA-1d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.0E-03 | | |
| CHLORDANE | 2.2E-03 | | |
| DDT | 9.7E-05 | | |
| DIELDRIN | 4.7E-02 | | |
| ENDRIN | 7.1E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 2.0E-05 | | |
| ISODRIN | 5.1E-05 | | |
| ARSENIC | 6.9E-03 | | |
| COPPER | 7.7E-04 | | |
| MERCURY | 1.5E-03 | | |
| TOTALS | 6.1E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 6.1E-02 | | | |

Site NC-SA-le
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+01 | 8.6E-05 | 8.6E-05 | 7.23% |
| CHLORDANE | 6.6E+00 | 6.6E-06 | 6.6E-06 | .55% |
| DIELDRIN | 2.5E+02 | 2.5E-04 | 2.5E-04 | 20.65% |
| ARSENIC | 7.4E+02 | 7.4E-04 | 7.4E-04 | 62.57% |
| CADMIUM | 2.2E+00 | 2.2E-06 | 2.2E-06 | .19% |
| CHROMIUM | 1.0E+02 | 1.0E-04 | 1.0E-04 | 8.81% |
| TOTALS | 1.2E+03 | 1.2E-03 | 1.2E-03 | 100.00% |

RESIDUAL RISK = 1.2E-10

Site NC-SA-le
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E-01 | 3.9E-01 | 22.68% |
| CHLORDANE | 2.0E-01 | | |
| DIELDRIN | 7.1E-01 | 7.1E-01 | 40.82% |
| DIISOPROPYLMETHYL PHOSPHONATE | 1.6E-05 | | |
| DITHIANE | 1.2E-04 | | |
| ENDRIN | 3.9E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.9E-04 | | |
| ISODRIN | 6.9E-02 | | |
| ARSENIC | 6.3E-01 | 6.3E-01 | 36.50% |
| CADMIUM | 1.8E-02 | | |
| CHROMIUM | 1.3E-02 | | |
| COPPER | 3.3E-03 | | |
| LEAD | 2.1E-01 | | |
| MERCURY | 1.4E-01 | | |
| ZINC | 5.7E-03 | | |
| TOTALS | 2.4E+00 | 1.7E+00 | 100.00% |

RESIDUAL HI = 6.6E-01

Site NC-SA-1f
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.7E-01 | 3.7E-07 | | |
| CHLORDANE | 7.2E-02 | 7.2E-08 | | |
| DDE | 7.0E-03 | 7.0E-09 | | |
| DDT | 7.2E-03 | 7.2E-09 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 9.50% |
| ARSENIC | 1.5E+02 | 1.5E-04 | 1.5E-04 | 89.95% |
| CADMIUM | 9.6E-01 | 9.6E-07 | 9.6E-07 | .55% |
| TOTALS | 1.7E+02 | 1.7E-04 | 1.7E-04 | 100.00% |

RESIDUAL RISK = 4.6E-07

Site NC-SA-1f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.7E-03 | | |
| CHLORDANE | 2.2E-03 | | |
| DDT | 9.7E-05 | | |
| DIELDRIN | 4.7E-02 | | |
| ENDRIN | 7.5E-04 | | |
| FLUORACETIC ACID | 1.0E+00 | 1.0E+00 | 100.00% |
| HEXACHLOROCYCLOPENTADIENE | 1.8E-03 | | |
| ISODRIN | 7.6E-04 | | |
| ARSENIC | 1.3E-01 | | |
| CADMIUM | 7.7E-03 | | |
| MERCURY | 1.7E-03 | | |
| TOTALS | 1.2E+00 | 1.0E+00 | 100.00% |

RESIDUAL HI = 2.0E-01

Site NC-SA-1g
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-1g
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL HI = 0.0E+00

Site NC-SA-2a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+02 | 3.4E-04 | 3.4E-04 | 63.42% |
| DDP | 1.7E-01 | 1.7E-07 | | |
| DDT | 3.3E-02 | 3.3E-08 | | |
| DIELDRIN | 1.6E+02 | 1.6E-04 | 1.6E-04 | 30.18% |
| ARSENIC | 3.5E+01 | 3.5E-05 | 3.5E-05 | 6.40% |
| TOTALS | 5.4E+02 | 5.4E-04 | 5.4E-04 | 100.00% |

RESIDUAL RISK = 2.1E-07

Site NC SA-2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+00 | 1.6E+00 | 100.00% |
| DDT | 4.5E-04 | | |
| DIELDRIN | 4.7E-01 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 9.0E-05 | | |
| ENDRIN | 1.7E-03 | | |
| ETHYLBENZENE | 6.7E-06 | | |
| FLUOROACETIC ACID | 2.1E-05 | | |
| ISOBORN | 3.2E-03 | | |
| M-XYLENE | 1.4E-05 | | |
| O,P-XYLENE | 5.8E-06 | | |
| ARSENIC | 3.0E-02 | | |
| COPPER | 2.8E-03 | | |
| LEAD | 4.5E-02 | | |
| MERCURY | 2.8E-03 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 2.1E+00 | 1.6E+00 | 100.00% |

RESIDUAL HI = 5.6E-01

Site NC-SA-2b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.3E+01 | 4.3E-05 | 4.3E-05 | 35.57% |
| DDE | 9.1E-03 | 9.1E-09 | | |
| DDT | 5.2E-03 | 5.2E-09 | | |
| DIELDRIN | 2.5E+01 | 2.5E-05 | 2.5E-05 | 20.31% |
| ARSENIC | 5.3E+01 | 5.3E-05 | 5.3E-05 | 44.12% |
| CALCIUM | 5.1E-01 | 5.1E-07 | | |
| TOTALS | 1.2E+02 | 1.2E-04 | 1.2E-04 | 100.00% |

RESIDUAL RISK = 5.2E-07

Site NC-SA-2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.0E-01 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 4.2E-05 | | |
| DDT | 7.1E-05 | | |
| DIELDRIN | 7.1E-02 | | |
| ENDRIN | 1.1E-04 | | |
| FLUOROACETIC ACID | 4.0E+00 | 4.0E+00 | 100.00% |
| ISODRIN | 1.5E-04 | | |
| ARSENIC | 4.5E-02 | | |
| CADMIUM | 4.1E-03 | | |
| COPPER | 7.9E-04 | | |
| LEAD | 4.2E-01 | | |
| MERCURY | 2.8E-03 | | |
| ZINC | 1.4E-03 | | |
| TOTALS | 4.8E+00 | 4.0E+00 | 100.00% |

RESIDUAL HI = 7.4E-01

Site NC-SA-2c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| DIELDRIN | 8.2E+00 | 8.2E-06 | 8.2E-06 | 13.47% |
| METHYLENE CHLORIDE | 3.1E-03 | 3.1E-09 | | |
| ARSENIC | 1.2E+01 | 1.2E-05 | 1.2E-05 | 20.41% |
| CHROMIUM | 4.0E+01 | 4.0E-05 | 4.0E-05 | 66.12% |
| TOTALS | 6.1E+01 | 6.1E-05 | 6.1E-05 | 100.00% |

RESIDUAL RISK = 3.1E-09

Site NC-SA-2C
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| P-CHLOROPHENYLMETHYL SULFONE | 2.4E-05 | | |
| DIELDRIN | 2.4E-02 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 1.4E-05 | | |
| ENDRIN | 2.4E-05 | | |
| FLUOROACETIC ACID | 1.5E+00 | 1.5E+00 | 100.00% |
| METHYLENE CHLORIDE | 7.6E-04 | | |
| ARSENIC | 1.1E-02 | | |
| CHROMIUM | 4.9E-03 | | |
| LEAD | 3.7E-02 | | |
| ZINC | 6.2E-04 | | |
| TOTALS | 1.5E+00 | 1.5E+00 | 100.00% |

RESIDUAL HI = 7.8E-02

Site NC-SA-2d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL | |
|----------|---------|---------|--------------------------------------|-------------|----------|
| | | | | CON CHEM | % (%) |
| ALDRIN | 3.4E+01 | 3.4E-05 | 3.4E-05 | 40.12% | |
| DOE | 2.8E-03 | 2.8E-09 | | | |
| DIELDRIN | 3.3E+01 | 3.3E-05 | 3.3E-05 | 38.18% | |
| ARSENIC | 1.9E+01 | 1.9E-05 | 1.9E-05 | 21.70% | |
| TOTALS | 8.6E+01 | 8.6E-05 | 8.6E-05 | 100.00% | |

RESIDUAL RISK = 2.8E-09

Site NC-SA-2d
NONCARCINOGEN

| CHEMICAL | HI OF CONTRIBUTING CHEMICALS | | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|------------------------------|------------------------------|---|
| | HI | HI OF CONTRIBUTING CHEMICALS | |
| ALDRIN | 1.6E-01 | | |
| DIELDRIN | 9.5E-02 | | |
| ENDRIN | 1.6E-04 | | |
| ARSENIC | 1.6E-02 | | |
| LEAD | 5.9E-02 | | |
| MERCURY | 3.7E-03 | | |
| ZINC | 5.9E-04 | | |
| TOTALS | 3.3E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 3.3E-01 | | | |

Site NC-SA-3
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+04 | 3.4E-02 | 3.4E-02 | 67.70% |
| BENZENE | 4.5E-02 | 4.5E-08 | | |
| CHLOROFORM | 2.3E-01 | 2.3E-07 | | |
| DIBROMOCHLOROPROPANE | 1.4E+01 | 1.4E-05 | 1.4E-05 | .03% |
| 1,2-DICHLOROETHANE | 4.6E-02 | 4.6E-08 | | |
| DIELDRIN | 1.6E+04 | 1.6E-02 | 1.6E-02 | 32.21% |
| METHYLENE CHLORIDE | 4.1E-06 | 4.1E-12 | | |
| 1,1,2,2-TETRACHLOROETHANE | 3.0E+00 | 3.0E-06 | 3.0E-06 | .01% |
| TETRACHLOROETHYLENE | 9.7E-01 | 9.7E-07 | 9.7E-07 | .00% |
| ARSENIC | 3.0E+01 | 3.0E-05 | 3.0E-05 | .06% |
| TOTALS | 5.1E+04 | 5.1E-02 | 5.1E-02 | 100.00% |

RESIDUAL RISK = 3.2E-07

Site NC-SA-3
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+02 | 1.6E+02 | 58.98% |
| BICYCLOHEPTADIENE | 9.2E-04 | | |
| CHLOROACETIC ACID | 4.7E+00 | 4.7E+00 | 1.75% |
| CHLOROBENZENE | 3.3E-04 | | |
| CHLOROFORM | 8.3E-03 | | |
| P-CHLOROPHENYLMETHYL SULFIDE | 4.2E-02 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 1.8E-02 | | |
| P-CHLOROPHENYLMETHYL SULFOXIDE | 4.2E-03 | | |
| DICYCLOPENTADIENE | 3.4E+00 | 3.4E+00 | 1.29% |
| DIELDRIN | 4.7E+01 | 4.7E+01 | 17.70% |
| DIISOPROPYLMETHYL PHOSPHONATE | 4.5E-05 | | |
| DIMETHYL DISULFIDE | 1.0E-02 | | |
| DIMETHYL METHYL PHOSPHONATE | 4.6E-03 | | |
| ENDRIN | 3.5E+00 | 3.5E+00 | 1.33% |
| ETHYLENEDIAMINE | 9.5E-05 | | |
| ISODRIN | 5.1E+01 | 5.1E+01 | 18.96% |
| ISOPROPYL METHYL PHOSPHONIC ACID | 1.8E-02 | | |
| METHYL ISOBUTYL KETONE | 1.0E-05 | | |
| METHYLENE CHLORIDE | 7.9E-10 | | |
| TETRACHLOROETHYLENE | 4.7E-03 | | |
| THIODIGLYCOL | 1.7E-02 | | |
| TOLUENE | 7.7E-03 | | |
| 1,1,1-TRICHLOROETHANE | 5.1E-06 | | |
| M-XYLENE | 5.8E-06 | | |
| O,P-XYLENE | 1.2E-05 | | |
| ARSENIC | 2.5E-02 | | |
| COPPER | 4.0E-02 | | |
| MERCURY | 7.4E-04 | | |
| ZINC | 2.3E-03 | | |
| TOTALS | 2.7E+02 | 2.7E+02 | 100.00% |

RESIDUAL HI = 2.0E-01

Site NC-SA-4a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+02 | 2.6E-04 | 2.6E-04 | 80.78% |
| DDT | 3.7E-03 | 3.7E-09 | | |
| DIBROMOCHLOROPROPANE | 1.0E-03 | 1.0E-09 | | |
| DIELDRIN | 1.4E-04 | 1.4E-10 | | |
| METHYLENE CHLORIDE | 6.1E+01 | 6.1E-05 | 6.1E-05 | 19.22% |
| TETRACHLOROETHYLENE | 1.1E-01 | 1.1E-07 | | |
| TOTALS | 3.2E+02 | 3.2E-04 | 3.2E-04 | 100.00% |

RESIDUAL RISK = 1.2E-07

Site NC-SA-4a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E+00 | 1.2E+00 | 100.00% |
| DDT | 1.4E-05 | | |
| DIELDRIN | 1.8E-01 | | |
| ENDRIN | 3.5E-02 | | |
| ISODRIN | 1.7E-01 | | |
| METHYLENE CHLORIDE | 3.8E-02 | | |
| TETRACHLOROETHYLENE | 7.7E-06 | | |
| MERCURY | 4.1E-04 | | |
| ZINC | 7.2E-04 | | |
| TOTALS | 1.6E+00 | 1.2E+00 | 100.00% |
| RESIDUAL HI = 4.2E-01 | | | |

Site NC-SA-4b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.0E+03 | 4.0E-03 | 4.0E-03 | 45.52% |
| CHLORDANE | 2.9E-01 | 2.9E-07 | | |
| DDE | 3.5E-02 | 3.5E-08 | | |
| DDT | 9.8E+00 | 9.8E-06 | 9.8E-06 | 1.1% |
| DIBROMOCHLOROPROPANE | 3.1E-02 | 3.1E-08 | | |
| DIELDRIN | 4.8E+03 | 4.8E-03 | 4.8E-03 | 54.37% |
| METHYLENE CHLORIDE | 2.8E-03 | 2.8E-09 | | |
| TOTALS | 8.9E+03 | 8.9E-03 | 8.9E-03 | 100.00% |

RESIDUAL RISK = 3.6E-07

Site NC-SA-4b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| ALDRIN | 1.9E+01 | 1.9E+01 | 55.66% |
| CHLORDANE | 8.7E-03 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 4.8E-04 | | |
| DDT | 1.3E-01 | | |
| DIELDRIN | 1.4E+01 | 1.4E+01 | 41.92% |
| DIISOPROPYLMETHYL PHOSPHONATE | 2.1E-06 | | |
| ENDRIN | 3.2E-01 | | |
| FLUOROACETIC ACID | 8.1E-01 | 8.1E-01 | 2.42% |
| HEXACHLOROCYCLOPENTADIENE | 1.6E-05 | | |
| ISODRIN | 2.5E-01 | | |
| METHYLENE CHLORIDE | 1.3E-03 | | |
| COPPER | 3.7E-02 | | |
| LEAD | 8.2E-02 | | |
| MERCURY | 1.4E-03 | | |
| ZINC | 1.0E-02 | | |
| TOTALS | 3.4E+01 | 3.3E+01 | 100.00% |
| RESIDUAL HI = 8.5E-01 | | | |

Site NC-SA-5a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+00 | 2.6E-06 | 2.6E-06 | 1.53% |
| CHLORDANE | 3.6E+00 | 3.6E-06 | 3.6E-06 | 2.11% |
| DDE | 1.0E-02 | 1.0E-08 | | |
| DDT | 7.0E-04 | 7.0E-10 | | |
| DIELDRIN | 5.7E+01 | 5.7E-05 | 5.7E-05 | 33.93% |
| ARSENIC | 1.1E+02 | 1.1E-04 | 1.1E-04 | 62.43% |
| CADMIUM | 3.8E-01 | 3.8E-07 | | |
| TOTALS | 1.7E+02 | 1.7E-04 | 1.7E-04 | 100.00% |

RESIDUAL RISK = 3.9E-07

Site NC-SA-5a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E-02 | | |
| CHLORDANE | 1.1E-01 | | |
| DDT | 9.5E-06 | | |
| DIELDRIN | 1.7E-01 | | |
| DITHIANE | 7.1E-04 | | |
| ENDRIN | 2.8E-03 | | |
| FLUOROACETIC ACID | 1.1E-06 | | |
| ARSENIC | 9.0E-02 | | |
| CADMIUM | 3.1E-03 | | |
| COPPER | 7.0E-04 | | |
| LEAD | 3.7E-02 | | |
| MERCURY | 4.8E-03 | | |
| ZINC | 1.0E-03 | | |
| TOTALS | 4.2E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 4.2E-01

Site NC-SA-5b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.6E+01 | 5.6E-05 | 5.6E-05 | 20.07% |
| CHLORDANE | 6.6E+00 | 6.6E-06 | 6.6E-06 | 2.37% |
| DDE | 2.8E-03 | 2.8E-09 | | |
| DIELDRIN | 9.8E+01 | 9.8E-05 | 9.8E-05 | 35.26% |
| METHYLENE CHLORIDE | 4.0E-03 | 4.0E-09 | | |
| 1,1,2,2-TETRACHLOROETHANE | 1.9E-06 | 1.9E-12 | | |
| ARSENIC | 1.2E+02 | 1.2E-04 | 1.2E-04 | 42.30% |
| CADMIUM | 4.3E-01 | 4.3E-07 | | |
| TOTALS | 2.8E+02 | 2.8E-04 | 2.8E-04 | 100.00% |

RESIDUAL RISK = 4.4E-07

Site NC-SA-5b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.6E-01 | | |
| CHLORDANE | 2.0E-01 | | |
| DIELDRIN | 2.8E-01 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 7.4E-05 | | |
| DITHIANE | 3.5E-03 | | |
| ENDRIN | 1.4E-02 | | |
| FLUOROACETIC ACID | 7.8E-01 | 7.8E-01 | 100.00% |
| ISODRIN | 2.0E-04 | | |
| ISOPROPYL METHYL PHOSPHONIC ACID | 2.2E-05 | | |
| METHYLENE CHLORIDE | 1.9E-03 | | |
| ARSENIC | 1.0E-01 | | |
| CADMIUM | 3.5E-03 | | |
| COPPER | 9.8E-04 | | |
| LEAD | 5.9E-02 | | |
| MERCURY | 5.0E-03 | | |
| ZINC | 1.1E-03 | | |
| TOTALS | 1.7E+00 | 7.8E-01 | 100.00% |

RESIDUAL HI = 9.3E-01

Site NC-SA-5c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+02 | 3.4E-04 | 3.4E-04 | 45.67% |
| DDE | 9.4E-03 | 9.4E-09 | | |
| DDT | 7.2E-03 | 7.2E-09 | | |
| DIELDRIN | 4.1E+02 | 4.1E-04 | 4.1E-04 | 54.33% |
| CADMIUM | 3.0E-01 | 3.0E-07 | | |
| TOTALS | 7.5E+02 | 7.5E-04 | 7.5E-04 | 100.00% |

RESIDUAL RISK = 3.2E-07

Site NC-SA-5c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+00 | 1.6E+00 | 57.14% |
| DDT | 9.7E-05 | | |
| DIELDRIN | 1.2E+00 | 1.2E+00 | 42.86% |
| ENDRIN | 1.3E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.1E-04 | | |
| ISODRIN | 6.9E-04 | | |
| CADMIUM | 2.4E-03 | | |
| LEAD | 6.4E-01 | | |
| ZINC | 2.3E-03 | | |
| TOTALS | 3.4E+00 | 2.8E+00 | 100.00% |

RESIDUAL HI = 6.4E-01

Site NC-SA-5d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 8.6E+00 | 8.6E-06 | 8.6E-06 | 25.17% |
| DIELDRIN | 2.5E+01 | 2.5E-05 | 2.5E-05 | 71.84% |
| CADMIUM | 1.0E+00 | 1.0E-06 | 1.0E-06 | 2.99% |
| TOTALS | 3.4E+01 | 3.4E-05 | 3.4E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-5d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 3.9E-02 | | |
| DIELDRIN | 7.1E-02 | | |
| ENDRIN | 3.2E-05 | | |
| CADMIUM | 8.2E-03 | | |
| TOTALS | 1.2E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.2E-01 | | | |

Site NC-SA-6a
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|------------|---------|---------|--------------------------------------|--|
| ALDRIN | 5.9E-05 | 5.9E-11 | | |
| CHLOROFORM | 6.6E-04 | 6.6E-10 | | |
| DIELDRIN | 1.8E-04 | 1.8E-10 | | |
| TOTALS | 9.0E-04 | 9.0E-10 | 0.0E+00 | .00% |

RESIDUAL RISK = 9.0E-10

Site NC-SA-6a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------------|---------|------------------------------------|--|
| ALDRIN | 2.7E-07 | | |
| CHLOROFORM | 1.8E-05 | | |
| P-CHLOROPHENYLMETHYL SULFONE | 4.7E-07 | | |
| DIELDRIN | 5.3E-07 | | |
| DIMETHYL DISULFIDE | 6.7E-05 | | |
| ENDRIN | 2.1E-07 | | |
| ISODRIN | 7.0E-07 | | |
| METHYL ISOBUTYL KETONE | 2.3E-05 | | |
| COPPER | 1.1E-03 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 2.1E-03 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.1E-03 | | | |

Site NC-SA-6b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 7.7E+01 | 7.7E-05 | 7.7E-05 | 51.79% |
| CHLORDANE | 7.2E-02 | 7.2E-08 | | |
| DDE | 1.7E-01 | 1.7E-07 | | |
| DDT | 3.5E-01 | 3.5E-07 | | |
| DIBROMOCHLOROPROPANE | 2.3E-02 | 2.3E-08 | | |
| DIELDRIN | 4.9E+01 | 4.9E-05 | 4.9E-05 | 32.86% |
| TETRACHLOROETHYLENE | 1.5E-02 | 1.5E-08 | | |
| ARSENIC | 2.3E+01 | 2.3E-05 | 2.3E-05 | 15.35% |
| TOTALS | 1.5E+02 | 1.5E-04 | 1.5E-04 | 100.00% |

RESIDUAL RISK = 6.3E-07

Site NC-SA-6b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 3.5E-01 | | |
| CHLORDANE | 2.2E-03 | | |
| DDT | 4.7E-03 | | |
| DIELDRIN | 1.4E-01 | | |
| ENDRIN | 2.4E-02 | | |
| ISODRIN | 1.2E-01 | | |
| TETRACHLOROETHYLENE | 7.2E-05 | | |
| ARSENIC | 2.0E-02 | | |
| COPPER | 7.7E-04 | | |
| LEAD | 4.1E-02 | | |
| MERCURY | 2.1E-03 | | |
| ZINC | 9.3E-04 | | |
| TOTALS | 7.1E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 7.1E-01 | | | |

Site NC-SA-7
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| DOE | 1.3E-03 | 1.3E-09 | | |
| DIELDRIN | 1.1E+00 | 1.1E-06 | 1.1E-06 | 100.00% |
| TOTALS | 1.1E+00 | 1.1E-06 | 1.1E-06 | 100.00% |

RESIDUAL RISK = 1.3E-09

Site NC SA-7
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------------|---------|------------------------------------|--|
| DIELDRIN | 3.3E-03 | | |
| DIMETHYL METHYL PHOSPHONATE | 1.3E-05 | | |
| ENDRIN | 8.3E-05 | | |
| LEAD | 2.0E-02 | | |
| ZINC | 7.2E-04 | | |
| TOTALS | 2.4E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.4E-02

Site NC-SA-8a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| CHLOROFORM | 4.8E-05 | 4.8E-11 | | |
| DIBROMOCHLOROPROPANE | 1.0E-02 | 1.0E-08 | | |
| DIELDRIN | 1.6E+01 | 1.6E-05 | 1.6E-05 | 27.67% |
| CHROMIUM | 4.3E+01 | 4.3E-05 | 4.3E-05 | 72.33% |
| TOTALS | 5.9E+01 | 5.9E-05 | 5.9E-05 | 100.00% |

RESIDUAL RISK = 1.0E-08

Site NC-SA-8a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| CHLOROACETIC ACID | 3.7E-02 | | |
| CHLOROPHORM | 1.3E-06 | | |
| DIELDRIN | 4.7E-02 | | |
| DIISOPROPYLMETHYL PHOSPHONATE | 1.2E-07 | | |
| CHROMIUM | 5.2E-03 | | |
| COPPER | 3.2E-03 | | |
| LEAD | 4.0E-02 | | |
| MERCURY | 2.8E-03 | | |
| ZINC | 1.3E-03 | | |
| TOTALS | 1.4E-01 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.4E-01 | | | |

Site NC-SA-8b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+01 | 2.6E-05 | 2.6E-05 | 31.14% |
| DDE | 3.7E-03 | 3.7E-09 | | |
| DDT | 9.1E-02 | 9.1E-08 | | |
| DIELDRIN | 4.1E+01 | 4.1E-05 | 4.1E-05 | 49.40% |
| METHYLENE CHLORIDE | 1.8E-02 | 1.8E-08 | | |
| ARSENIC | 1.6E+01 | 1.6E-05 | 1.6E-05 | 19.46% |
| TOTALS | 8.3E+01 | 8.3E-05 | 8.3E-05 | 100.00% |

RESIDUAL RISK = 1.1E-07

Site NC-SA-8b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E-01 | | |
| DDT | 1.2E-03 | | |
| DIELDRIN | 1.2E-01 | | |
| ENDRIN | 7.5E-04 | | |
| ISODRIN | 1.7E-02 | | |
| METHYLENE CHLORIDE | 5.7E-03 | | |
| 1,1,1-TRICHLOROETHANE | 2.8E-05 | | |
| ARSENIC | 1.4E-02 | | |
| COPPER | 9.1E-04 | | |
| MERCURY | 1.1E-03 | | |
| ZINC | 7.2E-03 | | |
| TOTALS | 2.8E-01 | 0.0E+00 | .00% |

RESIDUAL HI ~ 2.8E-01

Site NC-SA-8c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CHROMIUM | 4.4E+01 | 4.4E-05 | 4.4E-05 | 100.00% |
| TOTALS | 4.4E+01 | 4.4E-05 | 4.4E-05 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-8c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------|---------|------------------------------------|--|
| CHLOROACETIC ACID | 3.7E-02 | | |
| CHROMIUM | 5.3E-03 | | |
| COPPER | 1.0E-03 | | |
| LEAD | 3.2E-01 | | |
| MERCURY | 2.4E-03 | | |
| ZINC | 8.6E-04 | | |
| TOTALS | 3.7E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 3.7E-01

Site NC-SA-9a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-------------------------------|---------|------------------------------------|--|
| DIISOPROPYLMETHYL PHOSPHONATE | 1.7E-05 | | |
| TOTALS | 1.7E-05 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.7E-05 | | | |

Site NC-SA-9b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (3) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 5.9E-01 | 5.9E-07 | | |
| TOTALS | 5.9E-01 | 5.9E-07 | 0.0E+00 | .008 |

RESIDUAL RISK = 5.9E-07

Site NC-SA-9b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 4.8E-03 | | |
| TOTALS | 4.8E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 4.8E-03

Site NC-SA-9c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 3.7E-01 | 3.7E-07 | | |
| TOTALS | 3.7E-01 | 3.7E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.7E-07

Site NC-SA-9c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 3.0E-03 | | |
| TOTALS | 3.0E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 3.0E-03

Site NC 5A 9d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 4.8E-01 | 4.8E-07 | | |
| TOTALS | 4.8E-01 | 4.8E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 4.8E-07

Site M SA 9d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 3.9E-03 | | |
| TOTALS | 3.9E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 3.9E-03

Site NC-SA-9c
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ZINC | 6.6E-04 | | |
| TOTALS | 6.6E-04 | 0.0E+00 | .00% |

RESIDUAL HI - 6.6E-04

Site NC SA-9f
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK - 0.0E+00

Site NC-SA-9f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| COPPER | 9.3E-04 | | |
| ZINC | 7.2E-04 | | |
| TOTALS | 1.6E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 1.6E-03

Site NC-SA-9g
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9g
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI = 0.0E+00

Site NC-SA-9h
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9h
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
| RESIDUAL HI = 0.0E+00 | | | |

Site NC-SA-9}
CARCINOGEN

FRACTIONAL
RISK OF
CONTRIBUTING
CHEMICALS (%)

RISK OF
CONTRIBUTING
CHEMICALS

RISK

EI

CHEMICAL

.00%

0.0E+00

0.0E+00

0.0E+00

TOTALS

RESIDUAL RISK = 0.0E+00

Site NC-SA-9j
NONCARCINOGEN

| CHEMICAL | FRACTIONAL | | HI OF CONTRIBUTING CHEMICALS (%) |
|----------|------------|------------------------------|----------------------------------|
| | HI | HI OF CONTRIBUTING CHEMICALS | |
| MERCURY | 2.4E-04 | | |
| TOTALS | 2.4E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 2.4E-04

Site NC-SA-9K
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL R1/A OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9k
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .008 |
|--------|---------|---------|------|

RESIDUAL HI = 0.0E+00

Site NC-SA-91
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 7.4E+00 | 7.4E-06 | 7.4E-06 | 100.00% |
| TOTALS | 7.4E+00 | 7.4E-06 | 7.4E-06 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-91
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ARSENIC | 6.3E-03 | | |
| TOTALS | 6.3E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 6.3E-03

Site NC-SA-9m
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9m
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------------------------------------|--|
|----------|----|------------------------------------|--|

| | | | |
|--------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|------|

RESIDUAL HI = 0.0E+00

Site NC-SA-9n
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site NC-SA-9n
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOLUENE | 1.2E-06 | | |
| TOTALS | 1.2E-06 | 0.0E+00 | .00% |

RESIDUAL HI = 1.2E-06

Site NC-SA-90
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ARSENIC | 7.4E+00 | 7.4E-06 | 7.4E-06 | 100.00% |
| TOTALS | 7.4E+00 | 7.4E-06 | 7.4E-06 | 100.00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-90
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ARSENIC | 6.3E-03 | | |
| TOTALS | 6.3E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 6.3E-03

Site NC-SA-9p
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site NC-SA-9p
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL HI - 0.0E+00

Site NC-SA-9q
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site NC-SA-9q
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 1.9E-02 | | |
| MERCURY | 3.7E-04 | | |
| TOTALS | 1.9E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 1.9E-02

Site NC-SA 9f
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| CADMIUM | 3.7E-01 | 3.7E-07 | | |
| TOTALS | 3.7E-01 | 3.7E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.7E-07

Site NC-SA-9r
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| CADMIUM | 3.0E-03 | | |
| TOTALS | 3.0E-03 | 0.0E+00 | .00% |

RESIDUAL HI = 3.0E-03

Site NC-SA-9s
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site NC-SA-9s
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| MERCURY | 3.3E-04 | | |
| TOTALS | 3.3E-04 | 0.0E+00 | .00% |
| RESIDUAL HI = 3.3E-04 | | | |

SOUTHERN STUDY AREA

Site S-SA-1a
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (3) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.5E-02 | 3.5E-08 | | |
| DIELDRIN | 8.2E-02 | 8.2E-08 | | |
| 1,1,2,2-TETRACHLOROETHANE | 1.1E-01 | 1.1E-07 | | |
| TOTALS | 2.2E-01 | 2.2E-07 | 0.0E+00 | .003 |
| RESIDUAL RISK = 2.2E-07 | | | | |

Site S-SA la
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| ALDRIN | 1.6E-04 | | |
| DIELDRIN | 2.4E-04 | | |
| TOTALS | 4.0E-04 | 0.0E+00 | .00% |

RESIDUAL HI = 4.0E-04

Site S-SA-lb
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.3E+02 | 2.3E-04 | 2.3E-04 | 72.96% |
| CHLORDANE | 3.6E+01 | 3.6E-05 | 3.6E-05 | 11.39% |
| DIELDRIN | 4.2E+01 | 4.2E-05 | 4.2E-05 | 13.12% |
| DDE | 2.3E-01 | 2.3E-07 | | |
| DDT | 3.8E-01 | 3.8E-07 | | |
| 1,1,2,2-TETRACHLOROETHANE | 1.0E-01 | 1.0E-07 | | |
| ARSENIC | 8.1E+00 | 8.1E-06 | 8.1E-06 | 2.53% |
| TOTALS | 3.2E+02 | 3.2E-04 | 3.2E-04 | 100.00% |

RESIDUAL RISK = 7.1E-07

Site S-SA-1b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.1E+00 | 1.1E+00 | 49.54% |
| CHLORDANE | 1.1E+00 | 1.1E+00 | 50.46% |
| DIELDRIN | 1.2E-01 | | |
| DDT | 5.2E-03 | | |
| ENDRIN | 9.1E-04 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.1E-03 | | |
| ISODRIN | 6.1E-03 | | |
| ARSENIC | 6.9E-03 | | |
| COPPER | 6.5E-04 | | |
| LEAD | 3.1E-02 | | |
| MERCURY | 3.9E-02 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 2.4E+00 | 2.1E+00 | 100.00% |

RESIDUAL HI = 2.1E-01

Site S-SA-1c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.1E+02 | 1.1E-04 | 1.1E-04 | 45.74% |
| CHLORDANE | 2.0E-01 | 2.0E-07 | | |
| DIBROMOCHLOROPROPANE | 2.1E-01 | 2.1E-07 | | |
| DDE | 1.0E-02 | 1.0E-08 | | |
| DDT | 7.9E-03 | 7.9E-09 | | |
| DIELDRIN | 1.6E+00 | 1.6E-06 | 1.6E-06 | .67% |
| CHROMIUM | 1.3E+02 | 1.3E-04 | 1.3E-04 | 53.59% |
| TOTALS | 2.4E+02 | 2.4E-04 | 2.4E-04 | 100.00% |

RESIDUAL RISK = 4.3E-07

Site S-SA-1c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|------------------------------------|--|
| ALDRIN | 5.1E-01 | | |
| CHLORDANE | 5.9E-03 | | |
| DDT | 1.1E-04 | | |
| DIELDRIN | 4.7E-03 | | |
| ENDRIN | 4.3E-04 | | |
| ISODRIN | 2.5E-03 | | |
| CHROMIUM | 1.6E-02 | | |
| COPPER | 1.3E-03 | | |
| LEAD | 4.0E-02 | | |
| MERCURY | 8.9E-03 | | |
| ZINC | 7.9E-04 | | |
| TOTALS | 5.9E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 5.9E-01

Site S-SA-1d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| CHLORDANE | 9.2E-02 | 9.2E-08 | | |
| DIELDRIN | 4.4E-02 | 4.4E-08 | | |
| 1,1,2,2-TETRACHLOROETHANE | 1.0E-01 | 1.0E-07 | | |
| TOTALS | 2.4E-01 | 2.4E-07 | 0.0E+00 | .00% |

RESIDUAL RISK = 2.4E-07

Site S-SA-ld
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| CHLORDANE | 2.8E-03 | | |
| DIELDRIN | 1.3E-04 | | |
| 1,1,1-TRICHLOROETHANE | 6.5E-06 | | |
| TOTALS | 2.9E-03 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.9E-03 | | | |

Site S-SA-le
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.5E+01 | 1.5E-05 | 1.5E-05 | 23.55% |
| DDE | 4.2E-03 | 4.2E-09 | | |
| DOT | 2.6E-02 | 2.6E-08 | | |
| DIBROMOCHLOROPROPANE | 7.5E-02 | 7.5E-08 | | |
| DIELDRIN | 4.3E-01 | 4.3E-07 | | |
| METHYLENE CHLORIDE | 9.7E-03 | 9.7E-09 | | |
| TETRACHLOROETHYLENE | 2.4E-02 | 2.4E-08 | | |
| ARSENIC | 9.9E+00 | 9.9E-06 | 9.9E-06 | 15.98% |
| CHROMIUM | 3.8E+01 | 3.8E-05 | 3.8E-05 | 60.48% |
| TOTALS | 6.3E+01 | 6.3E-05 | 6.2E-05 | 100.00% |

RESIDUAL RISK = 5.7E-07

Site S-SA-le
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|------------------------|---------|------------------------------------|--|
| ALDRIN | 6.7E-02 | | |
| DDT | 3.5E-04 | | |
| DELDRIN | 1.3E-03 | | |
| ENDRIN | 3.5E-05 | | |
| ISODRIN | 7.1E-04 | | |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| METHYL ISOBUTYL KETONE | 3.0E-05 | | |
| TETRACHLOROETHYLENE | 1.2E-04 | | |
| 1,1,1-TRICHLOROETHANE | 7.9E-06 | | |
| ARSENIC | 8.5E-03 | | |
| CHROMIUM | 4.5E-03 | | |
| COPPER | 1.7E-03 | | |
| LEAD | 2.9E-02 | | |
| MERCURY | 4.3E-03 | | |
| ZINC | 1.2E-03 | | |
| TOTALS | 1.2E-01 | 6.0E+00 | .00% |

RESIDUAL HI = 1.2E-01

Site S-SA-1f
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.2E-03 | 4.2E-08 | | |
| DDP | 1.4E-03 | 1.4E-09 | | |
| DDT | 2.6E-03 | 2.6E-09 | | |
| TOTALS | 4.6E-02 | 4.6E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 4.6E-08

Site S-SA-1f
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 1.9E-04 | | |
| DDT | 3.5E-05 | | |
| TOTALS | 2.3E-04 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.3E-04 | | | |

Site S-SA-2a
CARCINOGEN

| CHEMICAL | BI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+02 | 2.6E-04 | 2.6E-04 | 86.31% |
| DDE | 4.4E-03 | 4.4E-09 | | |
| DOT | 3.1E-02 | 3.1E-08 | | |
| DIELDRIN | 4.1E+01 | 4.1E-05 | 4.1E-05 | 13.69% |
| METHYLENE CHLORIDE | 9.5E-02 | 9.5E-08 | | |
| TOTALS | 3.0E+02 | 3.0E-04 | 3.0E-04 | 100.00% |

RESIDUAL RISK = 1.3E-07

Site S-SA-2a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|--------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E+00 | 1.2E+00 | 100.00% |
| DDT | 4.3E-04 | | |
| DIELDRIN | 1.2E-01 | | |
| ENDRIN | 1.1E-03 | | |
| ISODRIN | 3.4E-02 | | |
| METHYLENE CHLORIDE | 1.9E-02 | | |
| TOLUENE | 2.4E-06 | | |
| MERCURY | 4.1E-04 | | |
| TOTALS | 1.4E+00 | 1.2E+00 | 100.00% |

RESIDUAL HI = 1.7E-01

Site S-SA-2b
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-----------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.4E+03 | 3.4E-03 | 3.4E-03 | 76.34% |
| CHLORDANE | 1.1E+00 | 1.1E-06 | 1.1E-06 | .02% |
| DDX | 8.0E-01 | 8.0E-07 | | |
| DDT | 1.0E+00 | 1.0E-06 | 1.0E-06 | .02% |
| DIELDRIN | 1.1E+03 | 1.1E-03 | 1.1E-03 | 23.61% |
| TOTALS | 4.5E+03 | 4.5E-03 | 4.5E-03 | 100.00% |

RESIDUAL RISK - 8.0E-07

Site S-SA-2b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 1.6E+01 | 1.6E+01 | 83.68% |
| CHLORDANE | 3.4E-02 | | |
| DDT | 1.4E-02 | | |
| DIELDRIN | 3.1E+00 | 3.1E+00 | 16.32% |
| ENDRIN | 1.5E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 5.2E-03 | | |
| ISODRIN | 6.8E-02 | | |
| COPPER | 1.3E-03 | | |
| LEAD | 5.5E-01 | | |
| MERCURY | 1.9E-03 | | |
| ZINC | 1.3E-03 | | |
| TOTALS | 2.0E+01 | 1.9E+01 | 100.00% |

RESIDUAL HI = 6.7E-01

Site S-SA-2c
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 3.8E-02 | 3.8E-08 | | |
| DDE | 1.3E-01 | 1.3E-07 | | |
| DDT | 5.6E-02 | 5.6E-08 | | |
| DIELDRIN | 4.8E-01 | 4.8E-07 | | |
| METHYLENE CHLORIDE | 1.8E-02 | 1.8E-08 | | |
| 1,1,2,2-TETRACHLOROETHANE | 2.4E-01 | 2.4E-07 | | |
| ARSENIC | 8.7E+00 | 8.7E-06 | 8.7E-06 | 100.00% |
| TOTALS | 9.6E+00 | 9.6E-06 | 8.7E-06 | 100.00% |

RESIDUAL RISK = 9.6E-07

Site S-SA-2c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 1.7E-04 | | |
| DDT | 7.6E-04 | | |
| DIELDRIN | 1.4E-03 | | |
| ENDRIN | 5.1E-05 | | |
| METHYLENE CHLORIDE | 3.8E-03 | | |
| ARSENIC | 7.4E-03 | | |
| MERCURY | 2.8E-04 | | |
| TOTALS | 1.4E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 1.4E-02 | | | |

Site S-SA-3a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| ALDRIN | 2.6E+00 | 2.6E-06 | 2.6E-06 | 51.248 |
| DIELDRIN | 2.5E+00 | 2.5E-06 | 2.5E-06 | 48.761 |
| TOTALS | 5.0E+00 | 5.0E-06 | 5.0E-06 | 100.008 |

RESIDUAL RISK = 0.0E+00

Site S-SA-3a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| ALDRIN | 1.2E-02 | | |
| DIELDRIN | 7.1E-03 | | |
| ENDRIN | 2.0E-03 | | |
| MERCURY | 1.5E-03 | | |
| TOTALS | 2.2E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 2.2E-02 | | | |

Site S-SA-3b
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| ALDRIN | 4.6E+02 | 4.6E-04 | 4.6E-04 | 51.44% |
| CHLORDANE | 4.6E+00 | 4.6E-06 | 4.6E-06 | .51% |
| DDE | 9.1E-03 | 9.1E-09 | | |
| DDT | 1.3E-01 | 1.3E-07 | | |
| DIBROMOCHLOROPROPANE | 1.4E-02 | 1.4E-08 | | |
| DIELDRIN | 4.3E+02 | 4.3E-04 | 4.3E-04 | 48.05% |
| TOTALS | 9.0E+02 | 9.0E-04 | 9.0E-04 | 100.00% |

RESIDUAL RISK = 1.5E-07

Site S-SA-3b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 2.1E+00 | 2.1E+00 | 62.94% |
| CHLORDANE | 1.4E-01 | | |
| DDT | 1.7E-03 | | |
| DIELDRIN | 1.3E+00 | 1.3E+00 | 37.06% |
| ENDRIN | 1.2E-02 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.4E-02 | | |
| ISODRIN | 3.9E-03 | | |
| MERCURY | 5.0E-03 | | |
| TOTALS | 3.6E+00 | 3.4E+00 | 100.00% |
| RESIDUAL HI = 1.7E-01 | | | |

Site S-SA-4
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|------------|---------|---------|--------------------------------------|--|
| ALDRIN | 1.5E+01 | 1.5E-05 | 1.5E-05 | 10.04% |
| CHLORDANE | 4.1E-01 | 4.1E-07 | | |
| CHLOROFORM | 3.1E-03 | 3.1E-09 | | |
| DDE | 8.6E-02 | 8.6E-08 | | |
| DOT | 1.5E-02 | 1.5E-08 | | |
| DIELDRIN | 1.3E+02 | 1.3E-04 | 1.3E-04 | 89.96% |
| TOTALS | 1.5E+02 | 1.5E-04 | 1.5E-04 | 100.00% |

RESIDUAL RISK = 5.2E-07

Site S-SA-4
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|---------------------------|---------|------------------------------------|--|
| ALDRIN | 6.7E-02 | | |
| CHLORDANE | 1.2E-02 | | |
| CHLOROFORM | 1.1E-04 | | |
| DDT | 2.0E-04 | | |
| DICYCLOPENTADIENE | 3.3E-03 | | |
| DIELDRIN | 3.8E-01 | | |
| ENDRIN | 2.4E-03 | | |
| HEXACHLOROCYCLOPENTADIENE | 1.7E-04 | | |
| ISODRIN | 8.3E-04 | | |
| TOTALS | 4.6E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 4.6E-01

Site S-SA-5a
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|---------|--------------------------------------|--|
| DIBROMOCHLOROPROPANE | 3.6E-02 | 3.6E-08 | | |
| TOTALS | 3.6E-02 | 3.6E-08 | 0.0E+00 | .00% |

RESIDUAL RISK = 3.6E-08

Site S-SA-5a
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | .001 |

RESIDUAL HI - 0.0E+00

Site S-SA-5b
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| CARBON TETRACHLORIDE | 4.8E-02 | 4.8E-08 | | |
| CHLORDANE | 2.6E+00 | 2.6E-06 | 2.6E-06 | 100.00% |
| TOTALS | 2.7E+00 | 2.7E-06 | 2.6E-06 | 100.00% |
| RESIDUAL RISK = 4.8E-08 | | | | |

Site S-SA-5b
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------------------|---------|------------------------------------|--|
| CARBON TETRACHLORIDE | 1.2E-03 | | |
| CHLORDANE | 7.9E-02 | | |
| LEAD | 2.4E-02 | | |
| TOTALS | 1.0E-01 | 0.0E+00 | .00% |

RESIDUAL HI = 1.0E-01

Site S-SA-5c
CARCINOGEN

| CHEMICAL | E1 | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|----|------|--------------------------------------|--|
|----------|----|------|--------------------------------------|--|

| | | | | |
|--------|---------|---------|---------|------|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |
|--------|---------|---------|---------|------|

RESIDUAL RISK = 0.0E+00

Site S-SA-5c
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 2.8E-02 | | |
| TOTALS | 2.8E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.8E-02

Site S-SA-5d
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|---------|--------------------------------------|--|
| TOTALS | 0.0E+00 | 0.0E+00 | 0.0E+00 | .00% |

RESIDUAL RISK = 0.0E+00

Site S-SA-5d
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|-----------------------|---------|------------------------------------|--|
| LEAD | 5.5E-02 | | |
| TOTALS | 5.5E-02 | 0.0E+00 | .00% |
| RESIDUAL HI = 5.5E-02 | | | |

Site S-SA-5e
CARCINOGEN

| CHEMICAL | EI | RISK | RISK OF CONTRIBUTING CHEMICALS | FRACTIONAL RISK OF CONTRIBUTING CHEMICALS (%) |
|-------------------------|---------|---------|--------------------------------------|--|
| DIBROMOCHLOROPROPANE | 4.6E-01 | 4.6E-07 | | |
| TOTALS | 4.6E-01 | 4.6E-07 | 0.0E+00 | .00% |
| RESIDUAL RISK = 4.6E-07 | | | | |

Site S SA-5e
NONCARCINOGEN

| CHEMICAL | HI | HI OF CONTRIBUTING CHEMICALS | FRACTIONAL HI OF CONTRIBUTING CHEMICALS (%) |
|----------|---------|------------------------------------|--|
| LEAD | 2.3E-02 | | |
| TOTALS | 2.3E-02 | 0.0E+00 | .00% |

RESIDUAL HI = 2.3E-02

APPENDIX B
CERTIFIED REPORTING LIMITS
FOR DETECTED CHEMICALS AT RMA

B-1

TABLE B-1
CERTIFIED REPORTING LIMITS
FOR DETECTED CHEMICALS AT RMA

| Chemical | <u>Certified Reporting Limit Range (ug/g)</u> | |
|---------------------------------|---|-------------|
| | Phase I | Phase II |
| Aldrin | 0.3 | 0.0019 |
| Arsenic | 2.5-5.0 | 2.5-5.0 |
| Atrazine | 0.3 | 0.25 |
| Benzene | 0.3 | 0.085 |
| Benzothiazole | 0.5 | 1.1-110 |
| Bicycloheptadiene | 0.3-0.4 | 1.1 |
| Cadmium | 0.66-0.74 | 0.66-0.74 |
| Carbon tetrachloride | 0.3 | 0.12 |
| Chlordane | 0.6-2.0 | 0.023 |
| Chloroacetic acid | 36 | 36 |
| Chlorobenzene | 0.3-2.0 | 0.20 |
| Chloroform | 0.3 | 0.068 |
| Chlorophenylmethyl sulfide | 0.9-4.0 | 4.0 |
| Chlorophenylmethyl sulfone | 0.3-0.6 | 9.0 |
| Chlorophenylmethyl sulfoxide | 0.9-7.0 | 4.8 |
| Chromium | 5.2-6.5 | 5.2-6.5 |
| Copper | 4.7-4.9 | 4.7-4.9 |
| Dibromochloropropane | 0.005-0.3 | 0.005-0.014 |
| PPDDE (isomer) | 0.3-0.6 | 0.0024 |
| PPDDT (isomer) | 0.5-0.6 | 0.002 |
| 1,2-Dichloroethane | 0.3-0.6 | 0.085 |
| 1,1-Dichloroethylene | -- | 0.12 |
| 1,2-Dichloroethylene | 0.3-0.8 | 0.15-0.30 |
| Dicyclopentadiene | 0.3-1.0 | 0.45 |
| Dieldrin | 0.3 | 0.0033 |
| Diisopropylmethyl phosphonate | 0.3-1.0 | 0.05 |
| Dimethyldisulfide | 0.5-0.7 | 0.69 |
| Dimethylmethyl phosphonate | 0.1-300 | 0.59-300 |
| Dithiane | 0.4-7.0 | 0.30 |
| Endrin | 0.3-0.5 | 0.0058 |
| Ethylbenzene | 0.3-0.4 | 0.16 |
| Hexachlorocyclopentadiene | 0.3-0.6 | 0.0018 |
| Isodrin | 0.3 | 0.0011 |
| Isopropylmethyl phosphonic acid | -- | 2.1 |
| Lead | 8.4-13 | 8.4-13 |
| Malathion | 0.3-0.7 | 0.25 |

TABLE B-1 (Continued)
 CERTIFIED REPORTING LIMITS
 FOR DETECTED CHEMICALS AT RMA

| Chemical | <u>Certified Reporting Limit Range (ug/g)</u> | |
|---------------------------|---|-----------|
| | Phase I | Phase II |
| Mercury | 0.05-0.06 | 0.05-0.06 |
| Methylene chloride | 0.7-2.0 | 3.7 |
| Methylisobutyl ketone | 0.3-0.7 | 0.64 |
| 1,4-Oxathiane | 0.3-0.5 | 0.3-2.0 |
| Parathion | 0.4-0.9 | 0.25 |
| Supona | 0.3-0.6 | 0.25 |
| 1,1,2,2-Tetrachloroethane | 0.3 | 0.3 |
| Tetrachloroethylene | 0.3 | 0.27 |
| Thiodiglycol | 4.2 | 4.2 |
| Toluene | 0.3 | 0.19 |
| 1,1,1-Trichloroethane | 0.3-0.4 | 0.088 |
| 1,1,2-Trichloroethane | 0.3-0.4 | 0.26 |
| Trichloroethylene | 0.3-0.5 | 0.14 |
| Xylene | 0.3-5.0 | 0.26-0.39 |
| Zinc | 8.7-9.5 | 8.7-9.5 |

2170000

1950000

1900000

28

Street

215000
↑

2180000
↑

East 96th

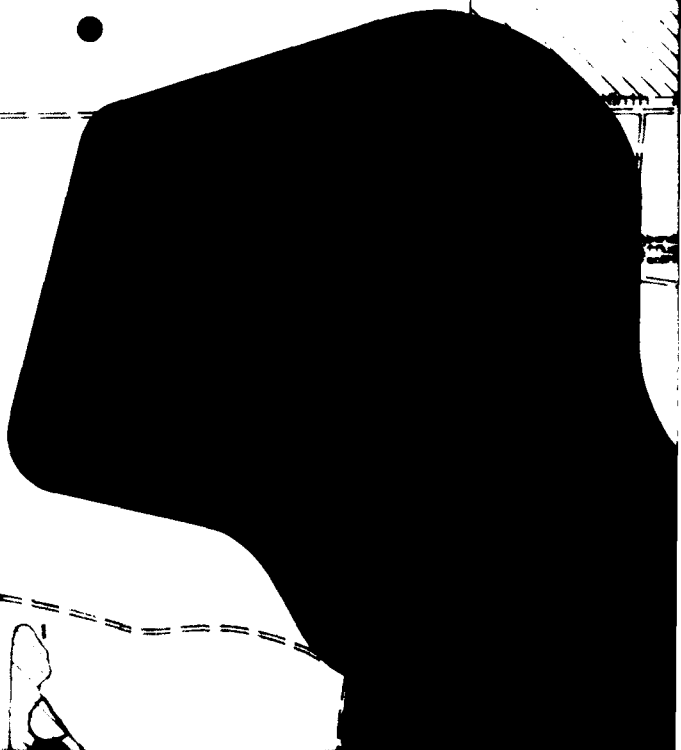
22

23

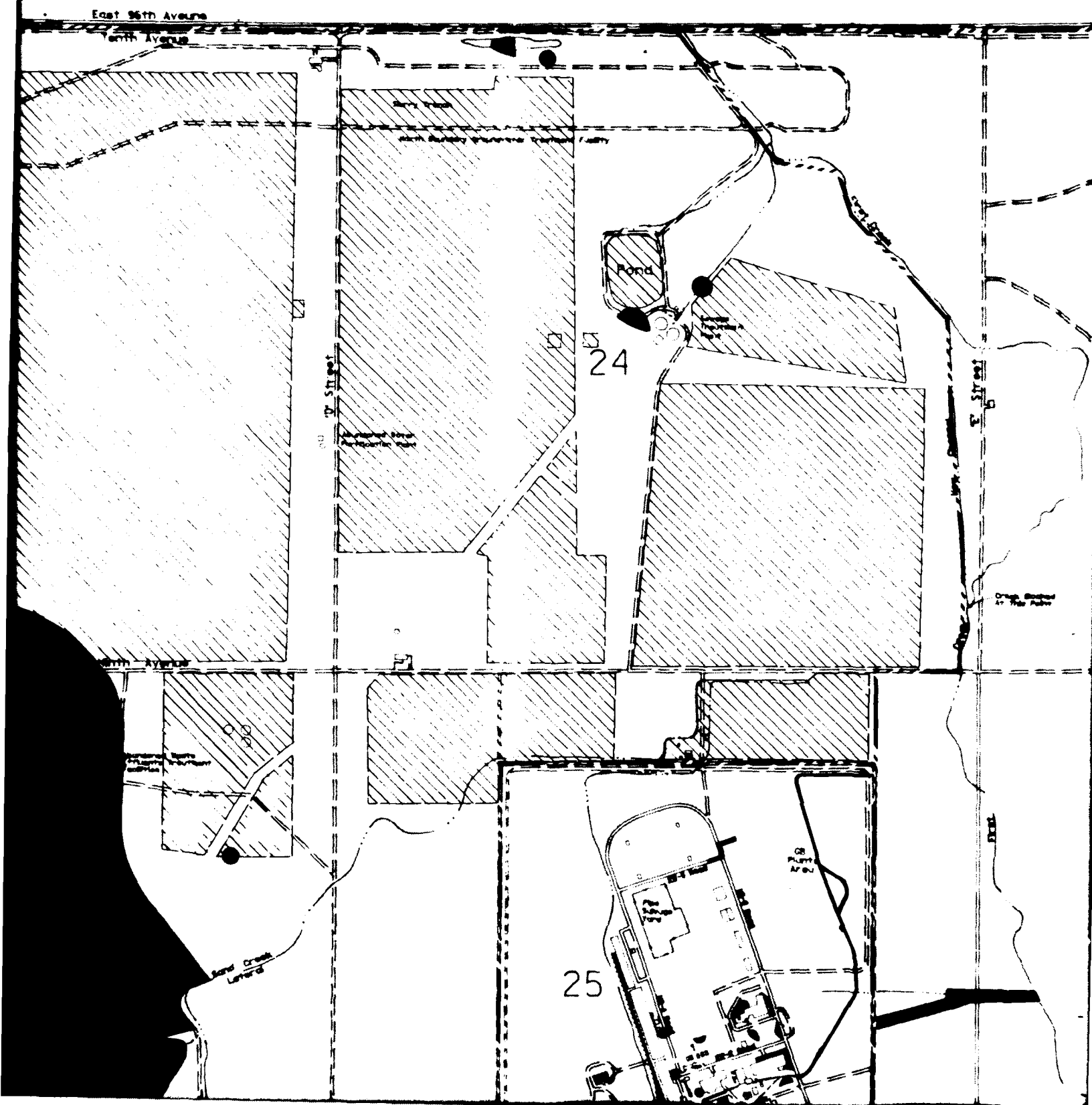
5th Street

North Avenue

27



1



2190000

2195000

East 25th Avenue
Yanith Avenue

20

19

E 31st St

Post Office

Drainage Station
in This Block

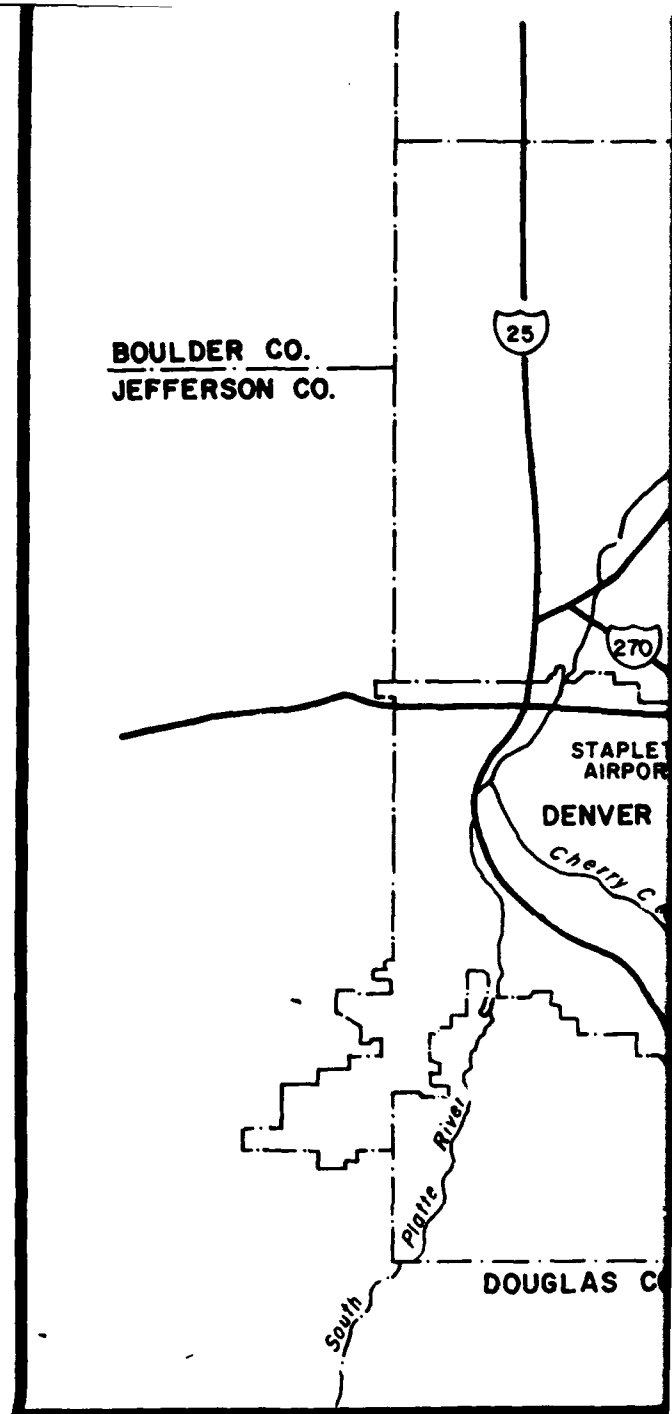
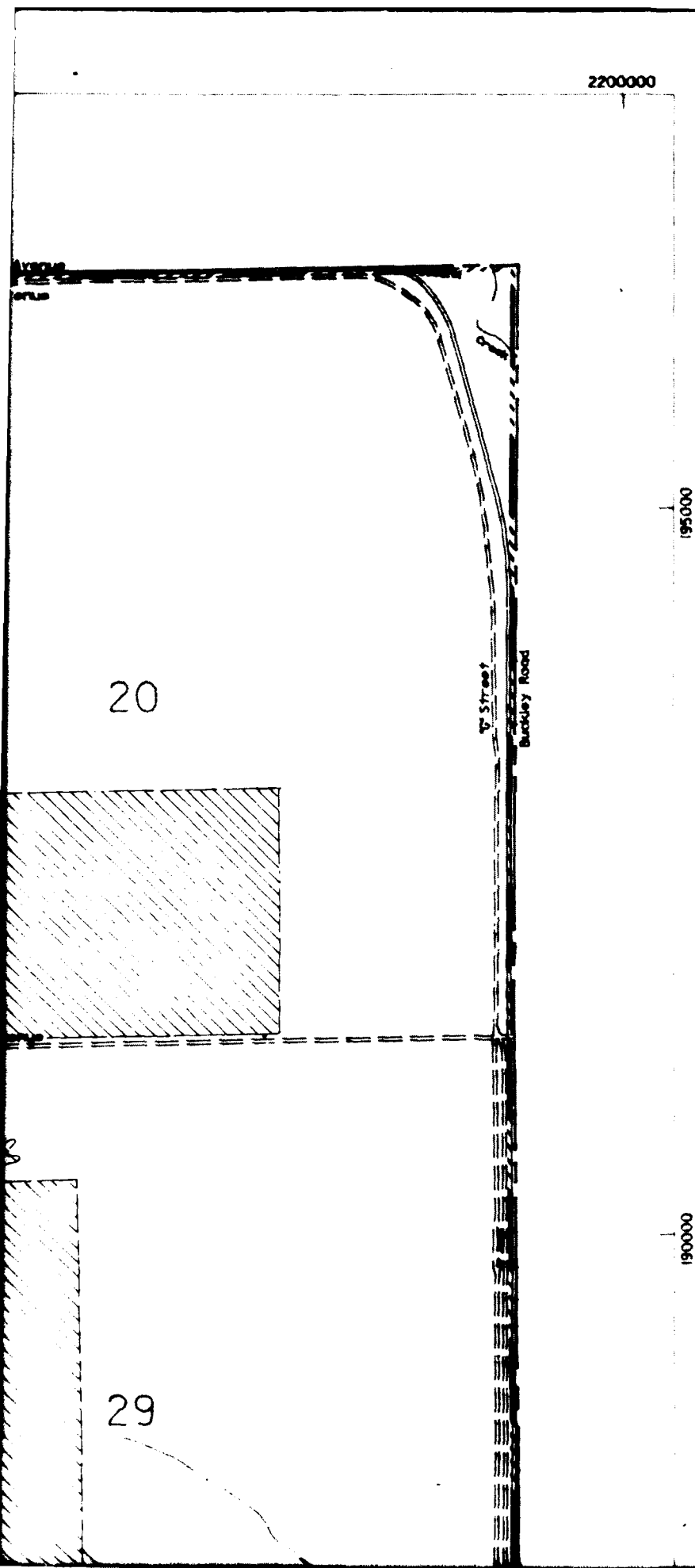
Antenna Foundation

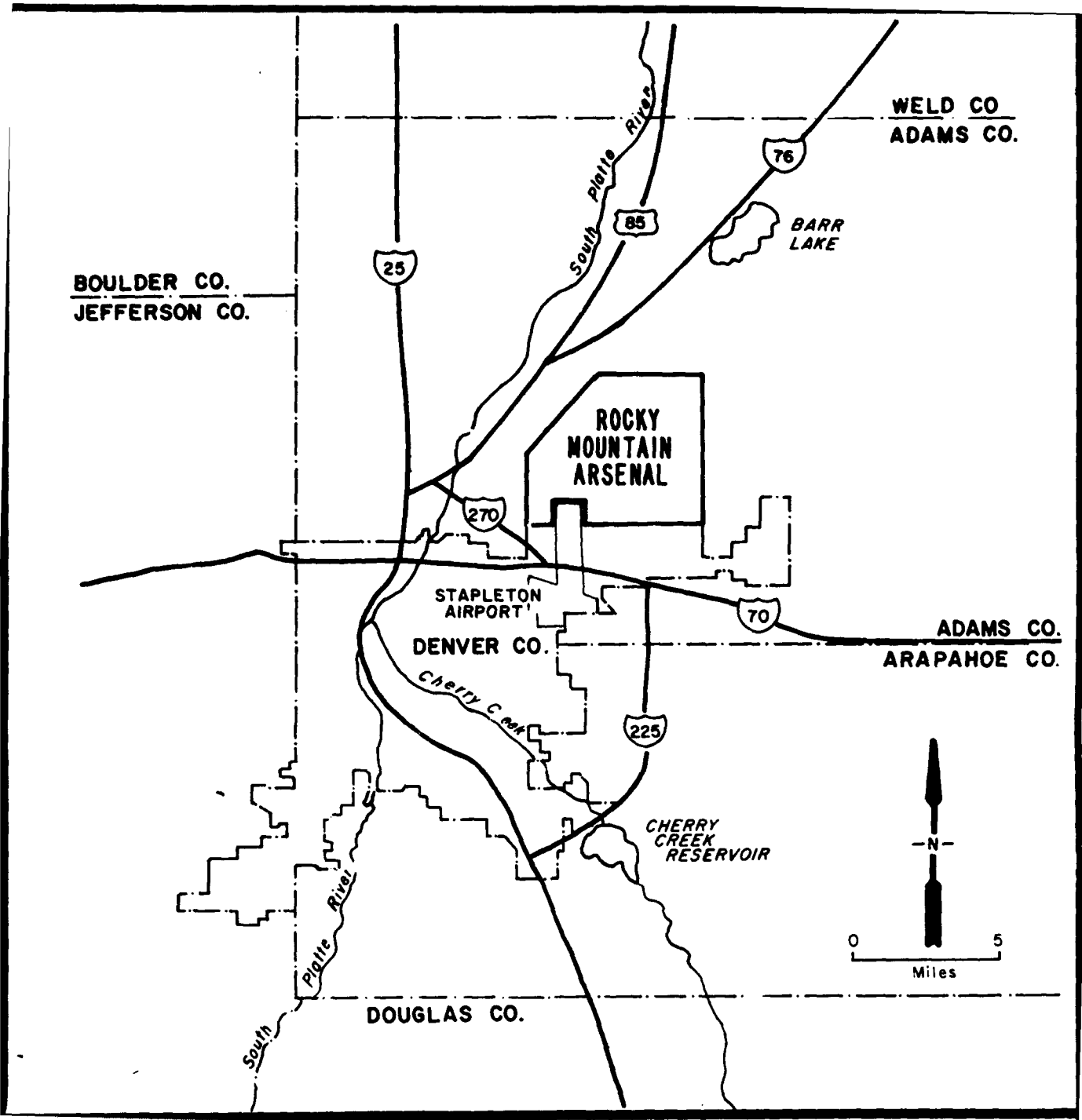
North Avenue

30

29

East





BOULDER CO.
JEFFERSON CO.

WELD CO.
ADAMS CO.

ROCKY
MOUNTAIN
ARSENAL

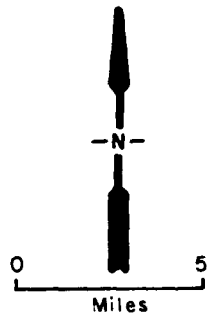
STAPLETON
AIRPORT

DENVER CO.

ADAMS CO.
ARAPAHOE CO.

CHERRY
CREEK
RESERVOIR

DOUGLAS CO.



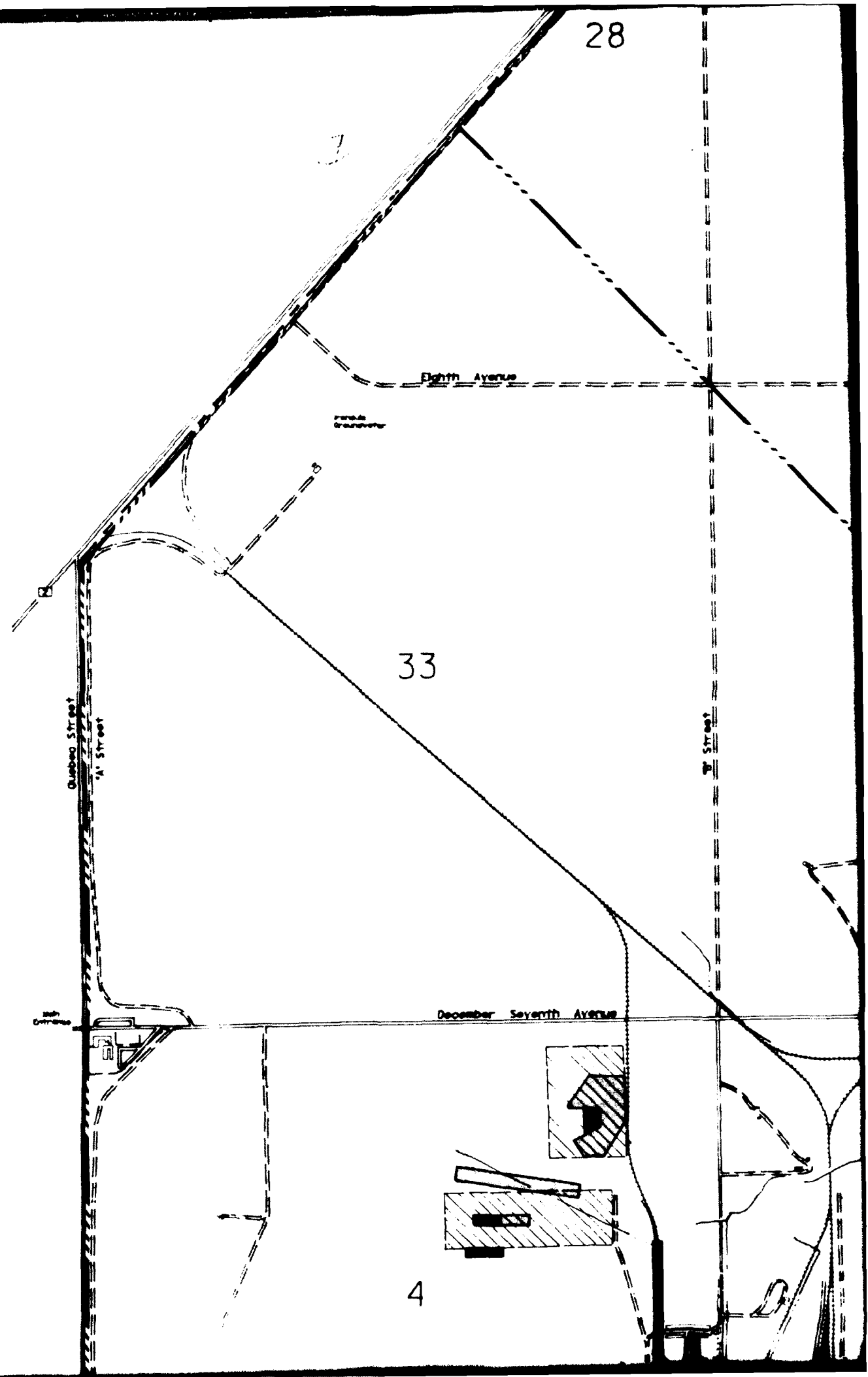
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180000

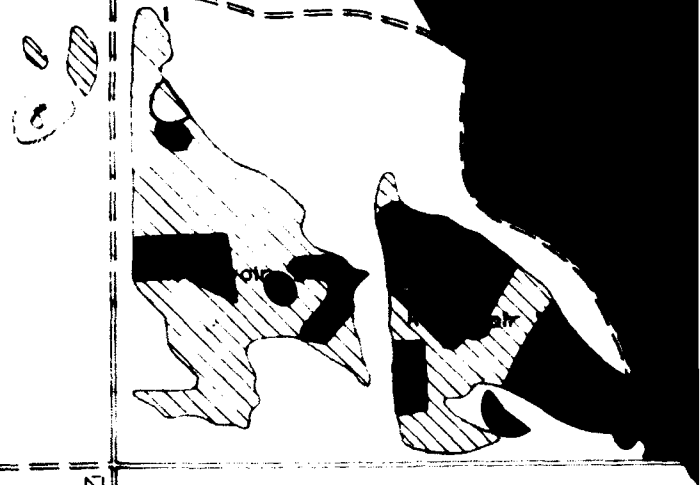
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33

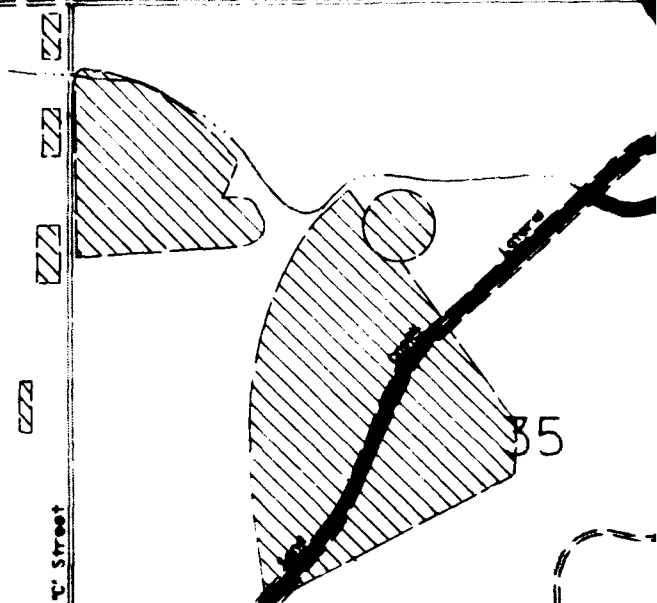
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27



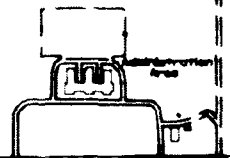
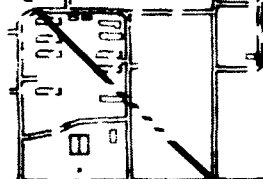
34



35

W Street

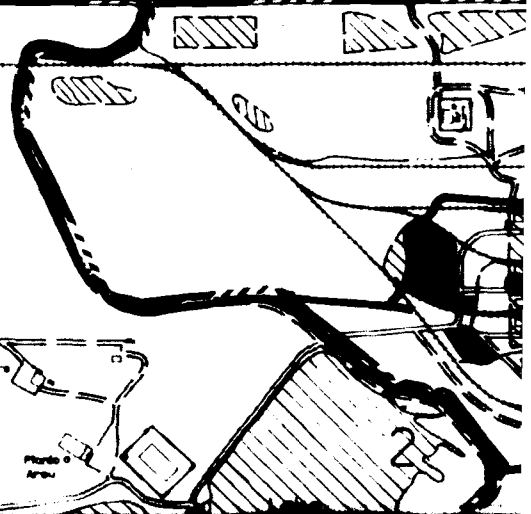
W Street

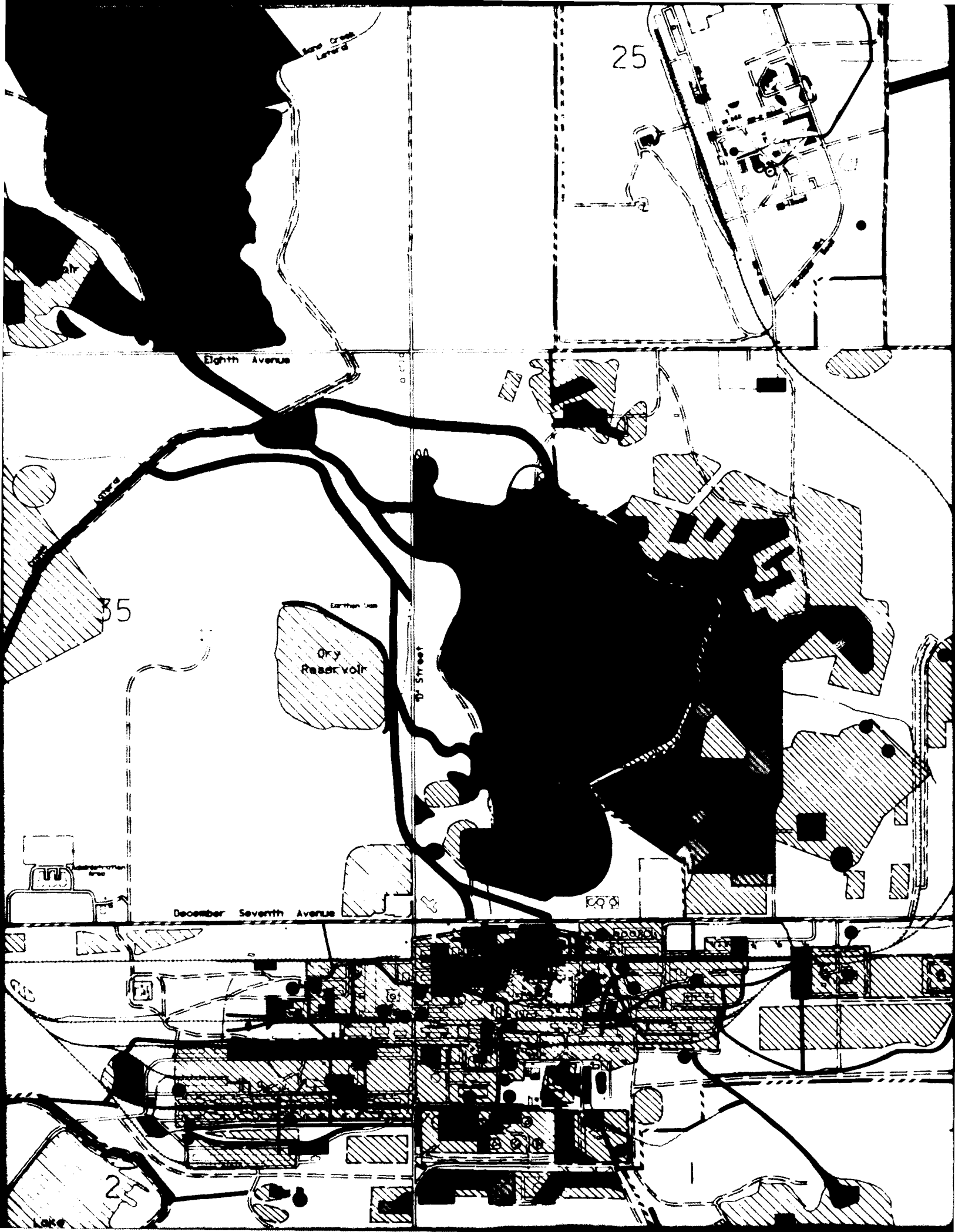


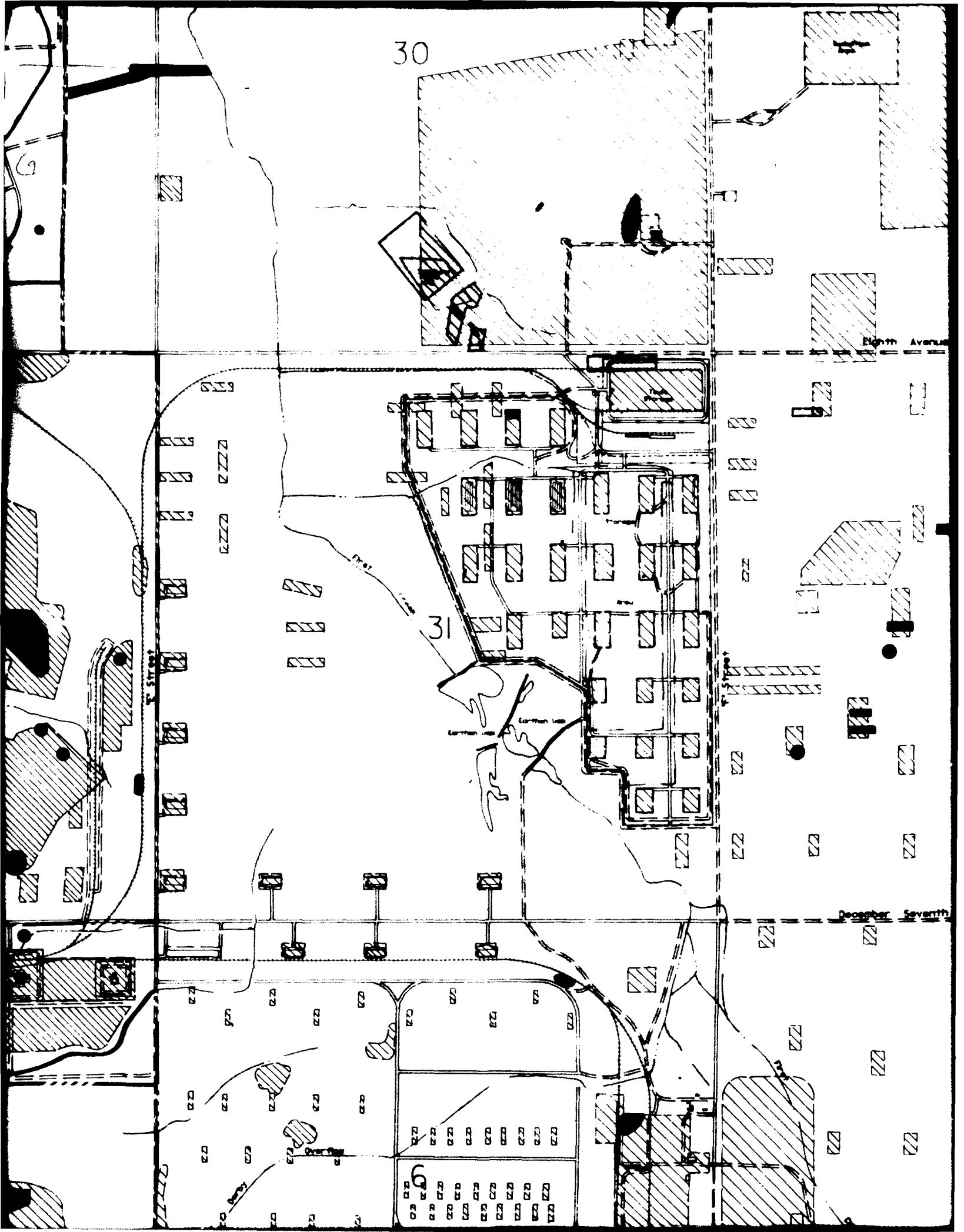
3



OFFICE





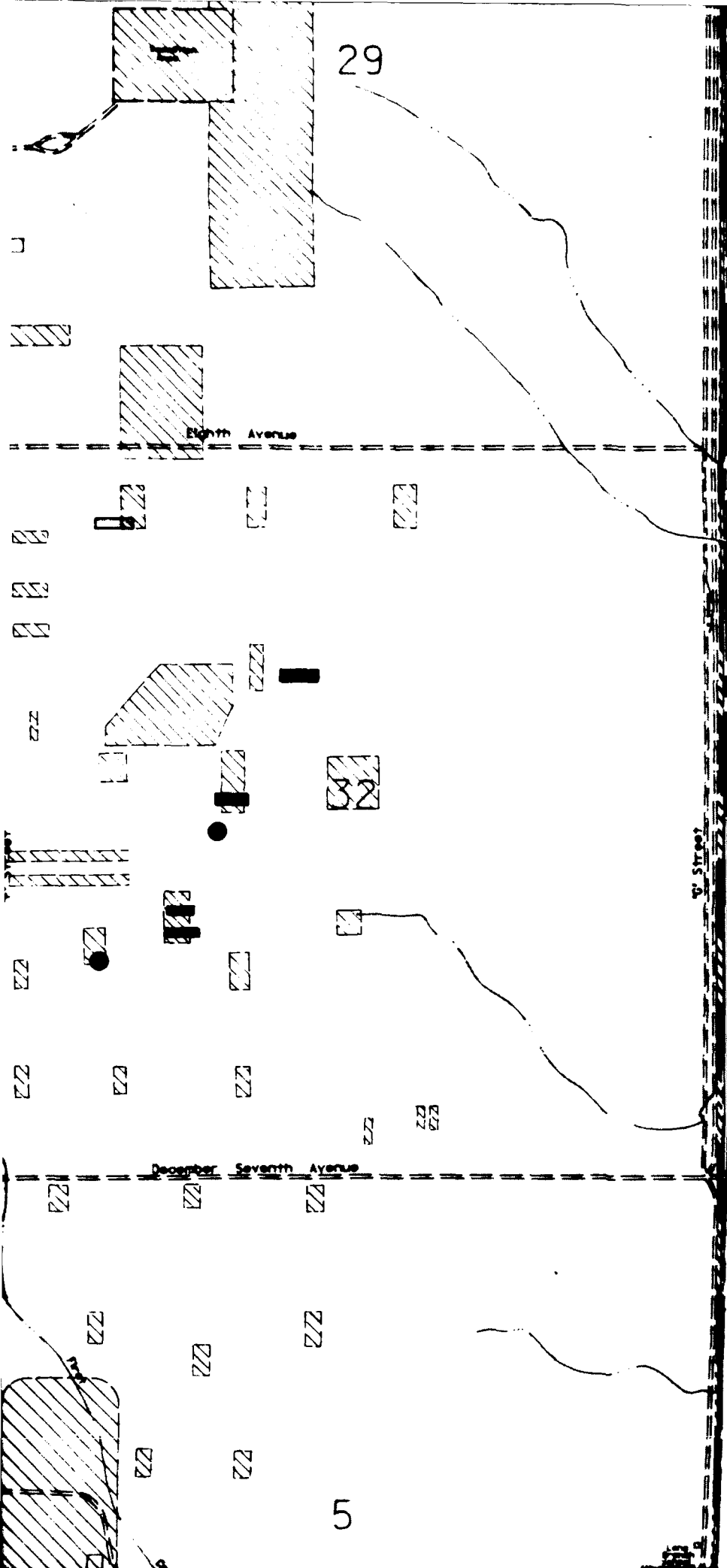


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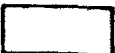

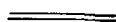



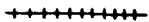
Eighth Avenue

31

Seventh Avenue



185000
180000

-  RMAC
-  Contam
-  Contam inhalat
-  Study
-  Paved
-  Structure
-  Section
-  Shore
-  Railroad

12

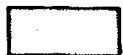
Legend



RMACCPMT Sites



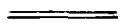
Contaminant concentrations exceed direct and indirect PPLVs



**Contaminant concentrations exceed enclosed space vapor
inhalation PPLVs only**



Study Area Boundaries



Paved Road



Unpaved Trail or Road



Structure



Foundation

7

Section Number



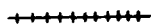
**Drainage Ditch or
Stream**



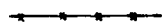
Shore Line



Arsenal Boundary



Railroad Tracks



Fence

175000

170000

Quebec Street

1st Street

4

Sixth Avenue

9

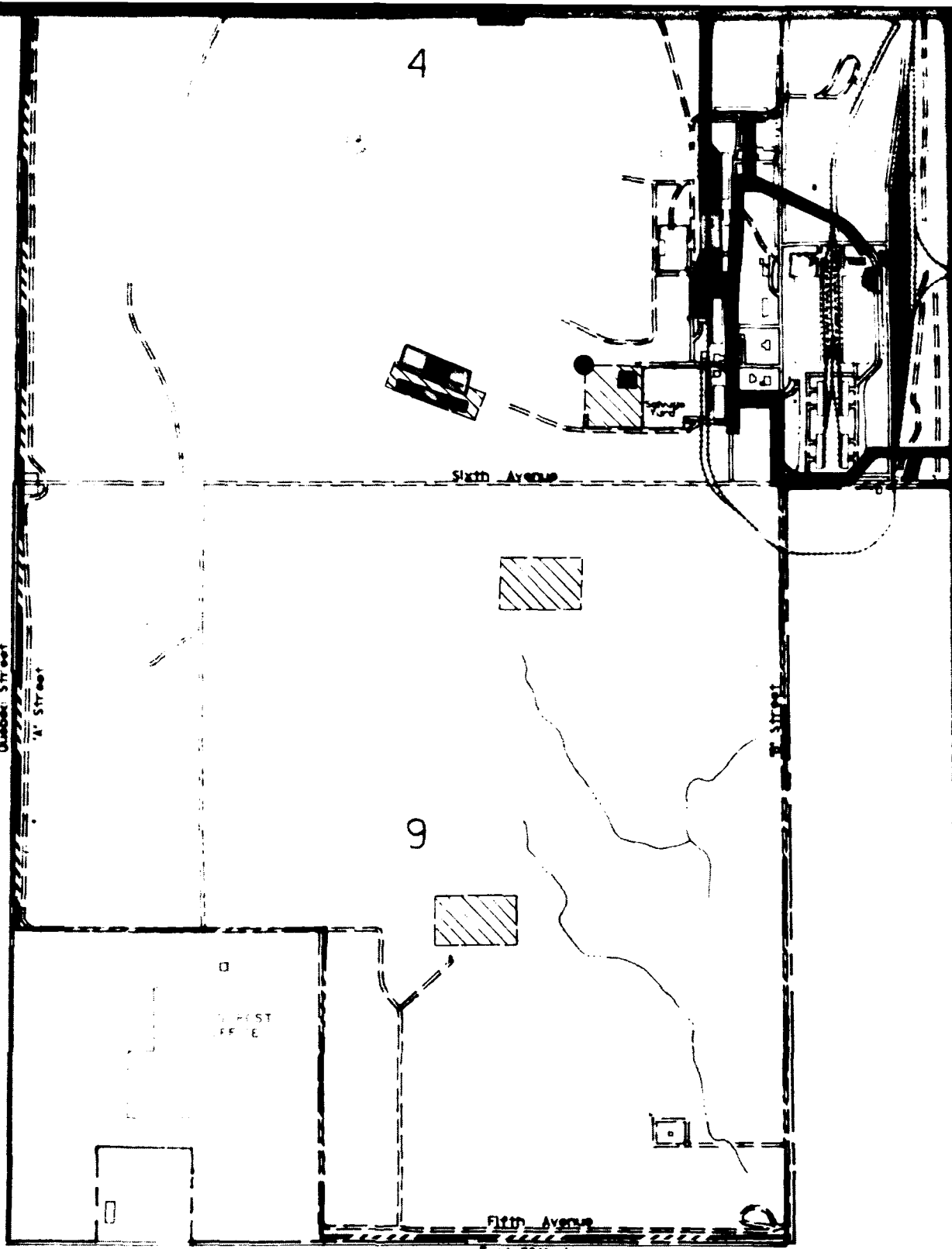
2nd Street

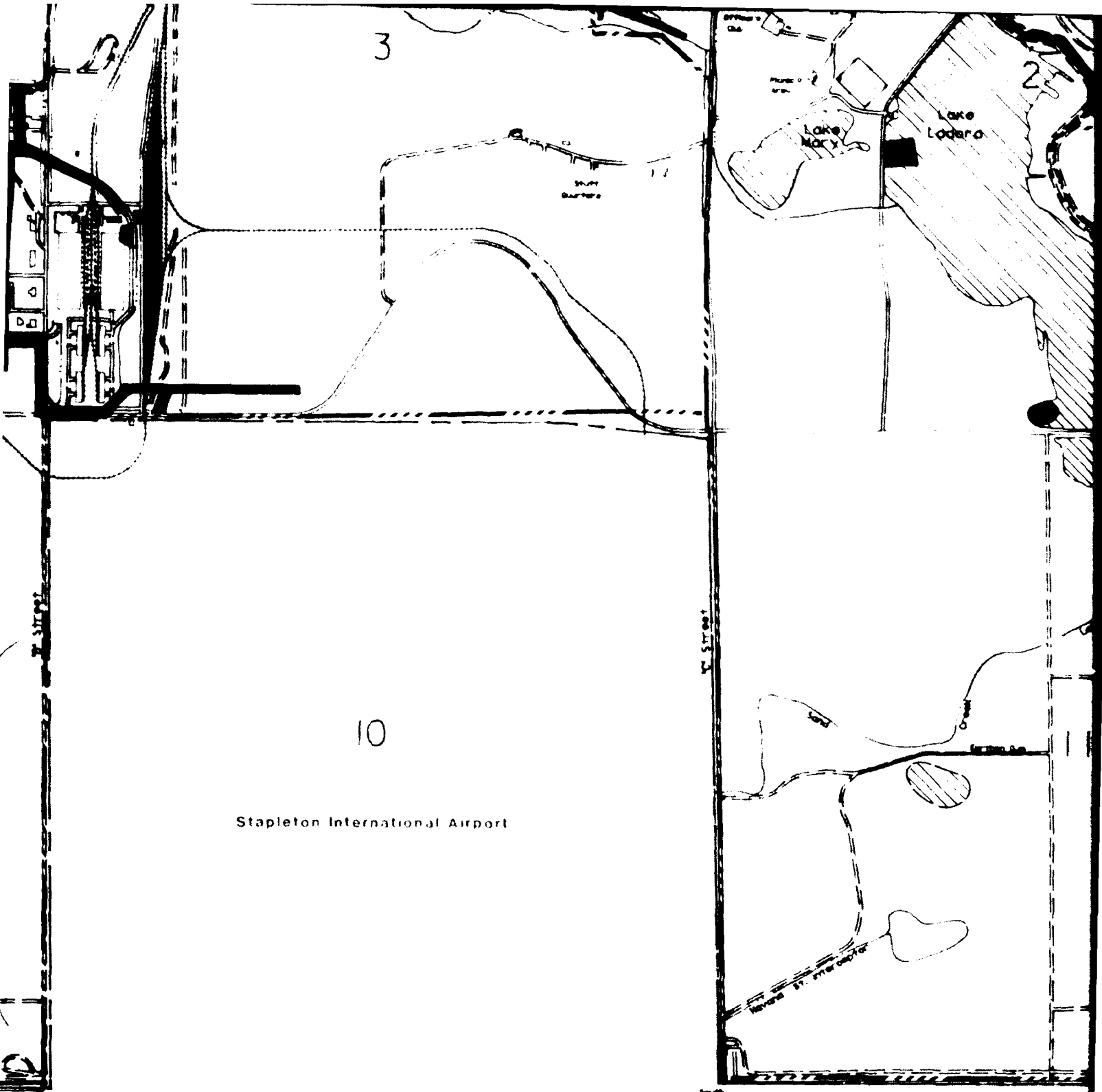
WEST
FENCE

Fifth Avenue

East 56th Avenue

2170000

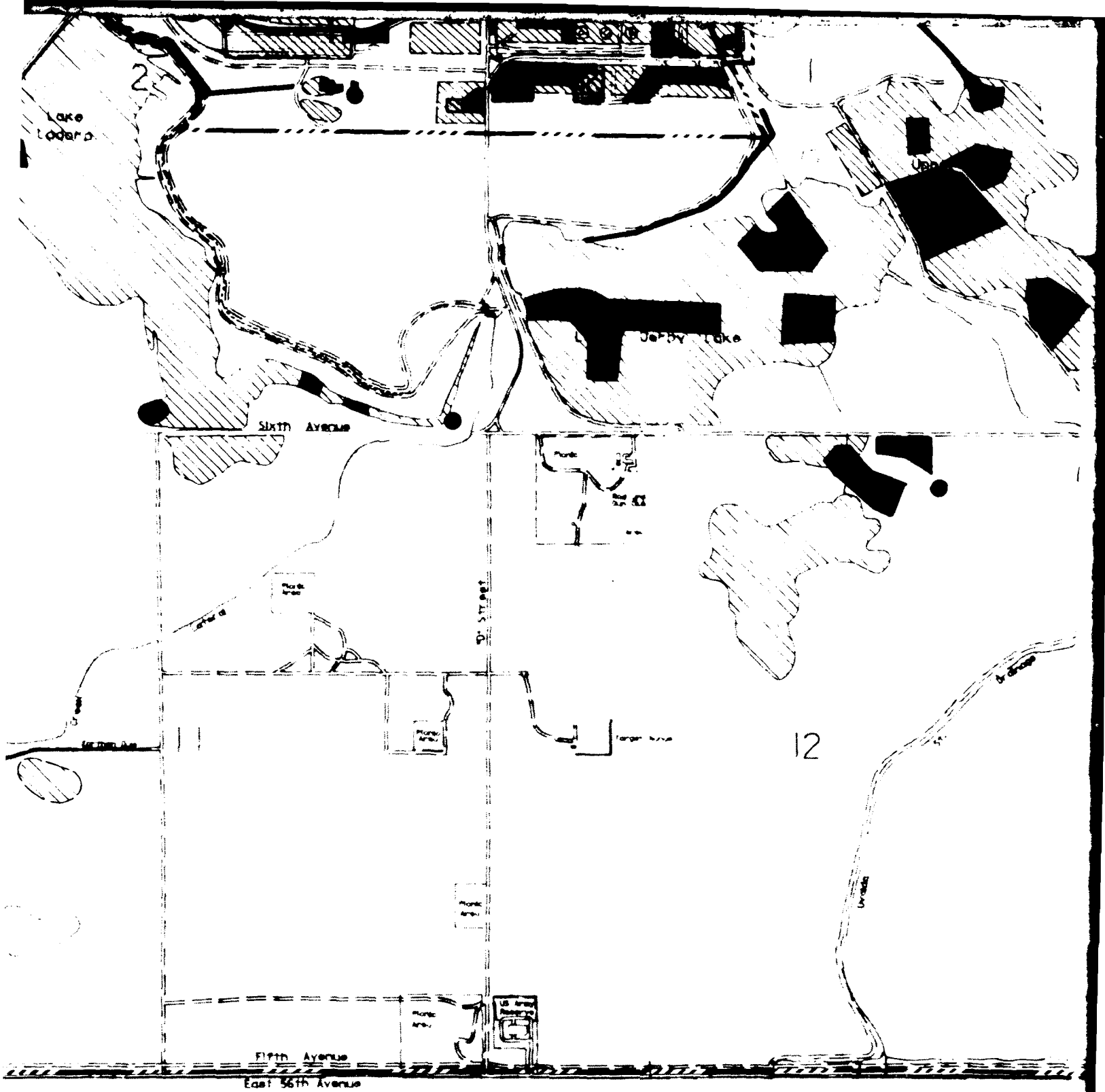




Stapleton International Airport

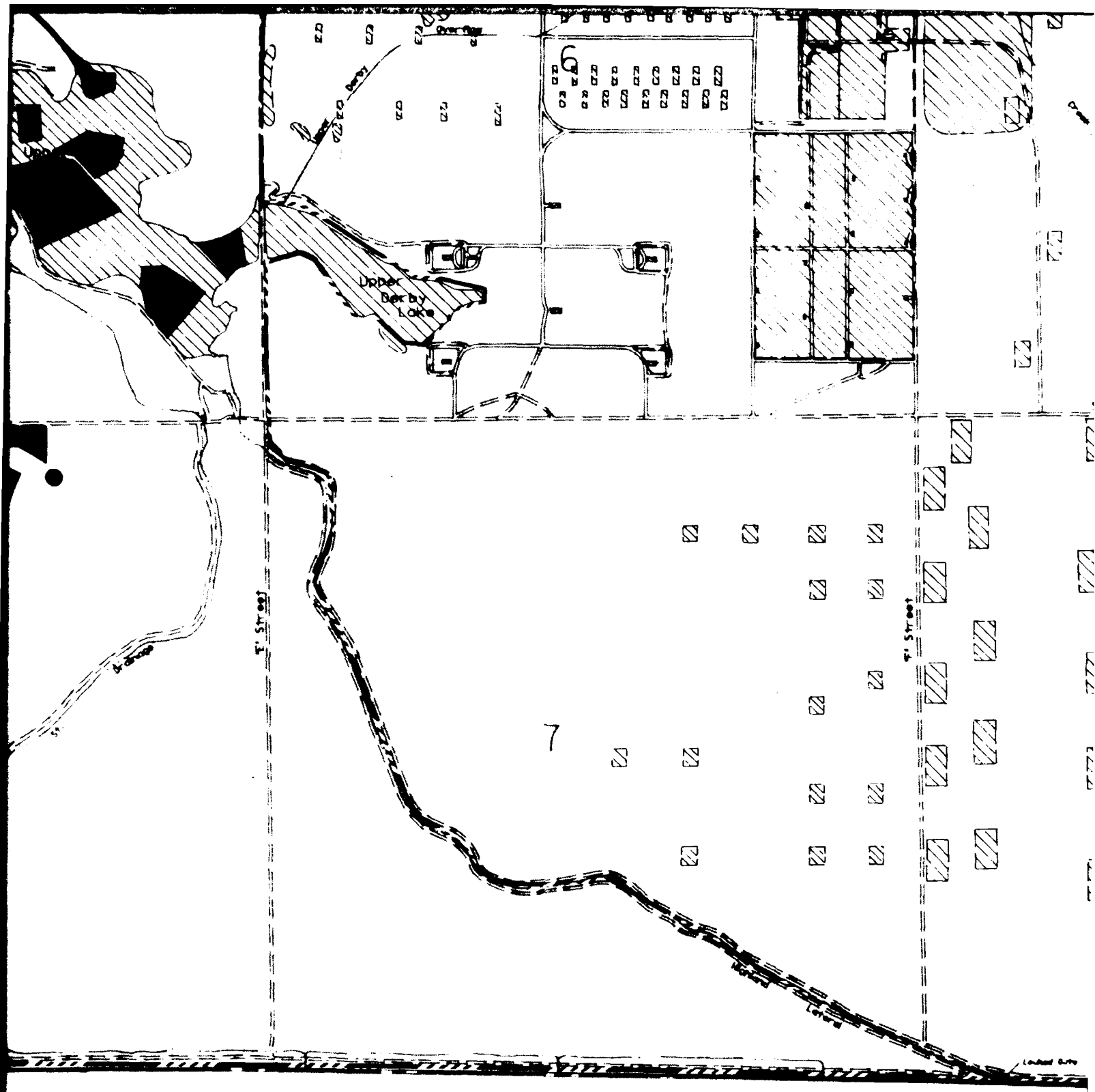
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2180000



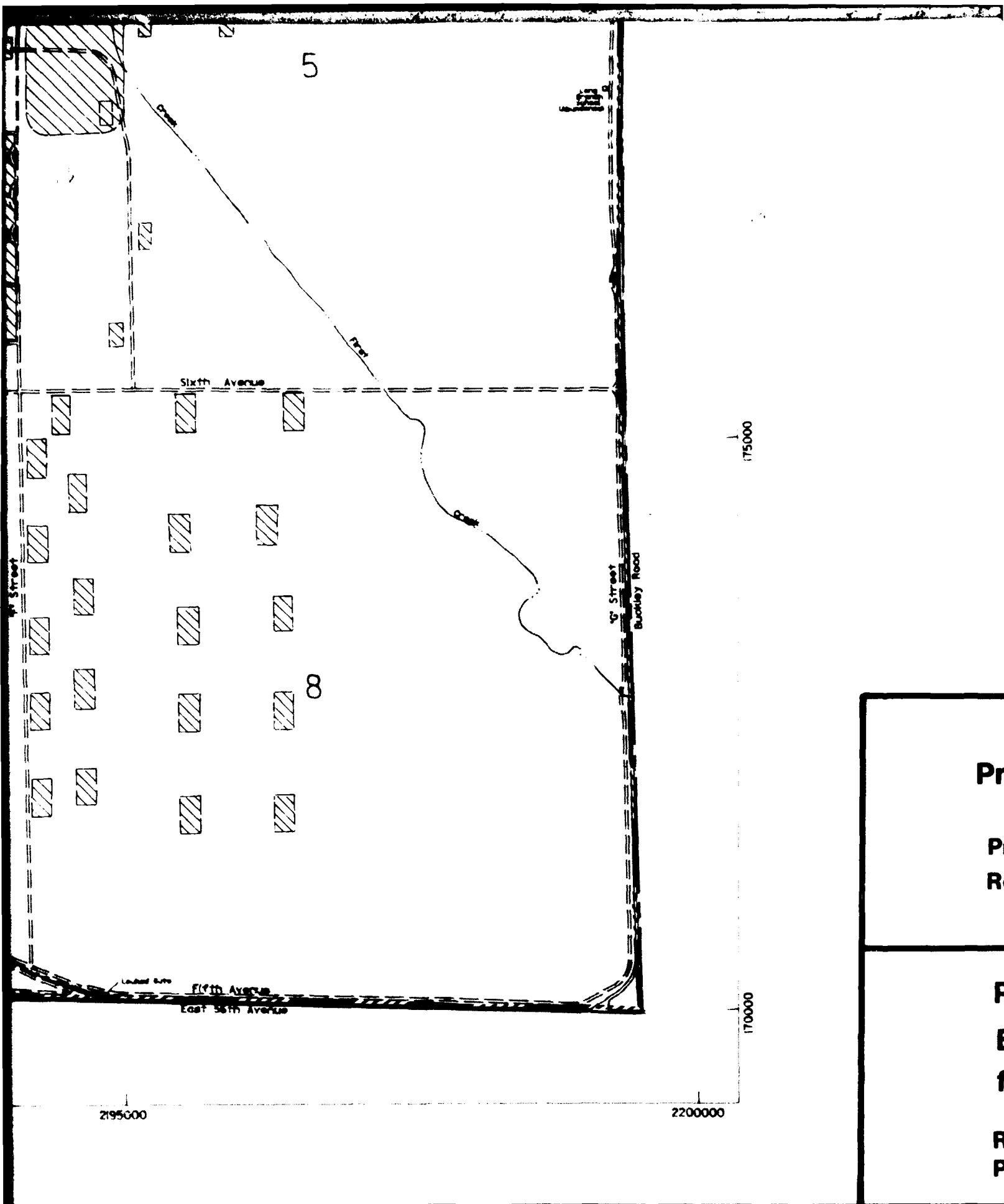
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2190000

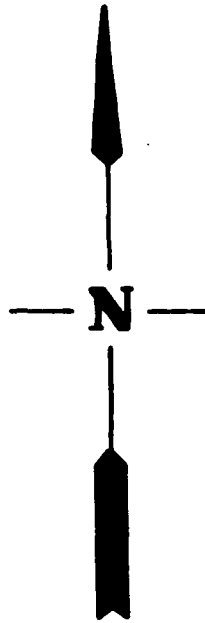
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Pr

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R

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E
1
R
P



Prepared for :

**Program Manager's Office for
Rocky Mountain Arsenal Cleanup**

PLATE E-1

**Estimated Areas of Exceedance
for Rocky Mountain Arsenal**

**Rocky Mountain Arsenal
Prepared by : Ebasco Services Incorporated**

9/19/90